Brocade Fabric OS v6.4.1
Release Notes v1.0

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Quick Look

Fabric OS (FOS) v6.4.1 is a maintenance release based on FOS v6.4.0. All hardware platforms and features supported in FOS v6.4.0 are also supported in v6.4.1. This release also contains fixes for many defects including those from the FOS v6.4.0a, b, and c patch releases.

In addition to the fixes noted above and listed in the defect tables at the end of this document, FOS v6.4.1 also includes support for several features.

Overview

New Features & Support

In addition to fixes for defects, there is new support in FOS v6.4.1 including:

- Support for **N_Port Trunking** when used in conjunction with Brocade HBAs with v2.3.0 (and later) software. N_Port Trunking allows two physical 8 Gbps links to be combined into a single logical 16 Gbps link. Use of this feature requires that the Brocade Trunking and SAO licenses are installed on the FOS-based switch to which the Brocade HBA is connected.

- Support for DCBX Application Protocol Type Length Values (TLV), aka "**iSCSI TLV**." This enables priority mapping and announcement of support for this mapping to attached devices for iSCSI protocol traffic over DCB links. This feature is supported and available only for the Brocade 8000.

- The Brocade FS8-18 Encryption Blade and the Brocade Encryption Switch now support **IBM's Tivoli Key Lifecycle Manager**. IBM Tivoli® Key Lifecycle Manager provides a centralized key management service for IT organizations that enables them to manage their encryption key lifecycle throughout the enterprise.

Bottleneck Detection Enhancements

FOS v6.4.0 **enhances bottleneck detection** capability by adding **support for congestion detection at E, Ex and F ports.** Bottleneck monitoring configuration has been greatly simplified in FOS v6.4.0 by allowing switch-level enablement of this feature for both latency and congestion bottleneck monitoring. New enhancements allow users to configure separate thresholds for detecting latency bottleneck and congestion bottleneck conditions. Bottleneck monitoring alerts can be configured on a per port basis and are delivered through SNMP traps and RAS logs.

FOS v6.3.1b introduced several changes and enhancements that are also included in FOS v6.4. These changes are not fully documented in existing Admin Guides or other materials but will be captured in future documentation and existing documentation updates and revisions. A brief summary of these enhancements follows:

- General improvements to Bottleneck Detection on both 4G and 8G platforms including **improved accuracy on reporting latency** and **reporting of latency values** in Bottleneck Detection events.
- **Identify credit lost condition** on 4G and 8G E_Ports and generate a RASLOG message (C2-5021) when detected. Unlike previous reporting that indicated when all credits for a VC were missing, this new capability reports on individual credit loss. This capability is enabled by default and is not configurable.
- New **option to configure the switch** "**edge hold time,**" allowing the switch to timeout frames for F_Ports sooner than for E_Ports. Proper use of this capability (disabled by default) reduces the likelihood of devices with high latencies causing frame drops in the core of the fabric and impacting other unrelated flows. Details on usage and recommended settings will be available in separate documentation.

- Support for **Class 3 frame transmit (Tx) timeout discard counters on 4G platforms** (previously 4G platforms only supported receive (Rx) timeout counters, reference Fabric Watch Administrator's Guide for details on use and configuration).

The Bottleneck Detection feature does not need any additional license and is available on all 4G and 8G capable platforms.

Optionally Licensed Software

Optionally licensed features in Fabric OS v6.4.1 include:

- **Brocade Ports on Demand** — Allows customers to instantly scale the fabric by provisioning additional ports via license key upgrade (applies to select models of switches).
- **Brocade Extended Fabrics** — Provides greater than 10km of switched fabric connectivity at full bandwidth over long distances (depending on platform this can be up to 3000km).
- **Brocade ISL Trunking** — Provides the ability to aggregate multiple physical links into one logical link for enhanced network performance and fault tolerance. Also includes Access Gateway ISL Trunking on those products that support Access Gateway deployment.
- **Brocade Advanced Performance Monitoring** — Enables performance monitoring of networked storage resources. This license includes the TopTalkers feature.
- **High Performance Extension over FCIP/FC** (formerly known as "FC-IP Services") (For the FR4-18i blade and Brocade 7500) — This license key also includes the FC-FastWrite feature and IPsec capabilities.
- **Brocade Accelerator for FICON** – This license enables unique FICON emulation support for IBM's Global Mirror (formerly XRC) application (including Hitachi Data Systems HXRC and EMC's XRC) as well as Tape Pipelining for all FICON tape and virtual tape systems to significantly improve XRC and tape backup/recovery performance over virtually unlimited distance for 7500, upgraded 7500E and FR4-18i.
- **Brocade Fabric Watch** — Monitors mission-critical switch operations. Fabric Watch also includes Port Fencing capabilities.
- **FICON Management Server** — Also known as "CUP" (Control Unit Port), enables host-control of switches in Mainframe environments.
- **ICL 16-link, or Inter Chassis Links** – This license provides dedicated high-bandwidth links between two Brocade DCX chassis, without consuming valuable front-end 8Gb ports. Each chassis must have the 16-link ICL license installed in order to enable the full 16-link ICL connections. (Available on the DCX only, previously known as simply the "ICL License" for DCX.)
- **ICL 8-Link, or Inter Chassis Links** – This license activates all eight links on ICL ports on a DCX-4S chassis or half of the ICL bandwidth for each ICL port on the DCX platform by enabling only eight links out of the sixteen links available. This allows users to purchase half the bandwidth of DCX ICL ports initially and upgrade with an additional 8-link license to utilize the full ICL bandwidth at a later time. This license is also useful for environments that wish to create ICL connections between a DCX and a DCX-4S, the latter of which cannot support more than 8 links on an ICL port. Available on the DCX-4S and DCX platforms only (This license replaces the original ICL license for the DCX-4S).
- **Enhanced Group Management** — This license, available only on the DCX, DCX-4S and other 8G platforms, enables full management of the device in a datacenter fabric with deeper element management functionality and greater management task aggregation throughout the environment. This license is used in conjunction with Brocade's Data Center Fabric Manager (DCFM) application software.
- **Adaptive Networking** — Adaptive Networking provides a rich framework of capability allowing a user to ensure high priority connections obtain the network resources necessary for optimum performance, even in congested environments. The QoS SID/DID Prioritization and Ingress Rate Limiting features

are the first components of this license, and are fully available on all 8G platforms.

- **Integrated Routing** — This license allows ports in a DCX, DCX-4S, 5300, 5100, VA-40FC (in switch mode), 7800 or Brocade Encryption Switch to be configured as EX_Ports or VEX_Ports supporting Fibre Channel Routing. This eliminates the need to add an FR4-18i blade or use the 7500 for FCR purposes, and also provides double the bandwidth for each FCR connection (when connected to another 8G-capable port).
- **7500E Upgrade** (For the Brocade 7500E only) — This license allows customers to upgrade a 4-port (2 FC ports and 2 GE ports) 7500E base to a full 18-port (16 FC ports and 2 GE ports) 7500 configuration and feature capability. The upgraded 7500E includes the complete High Performance Extension license feature set.
- **Encryption Performance Upgrade** — This license provides additional encryption processing power. For the Brocade Encryption Switch or a DCX/DCX-4S, the Encryption Performance License can be installed to enable full encryption processing power on the BES or on all FS8-18 blades installed in the DCX/DCX-4S chassis.
- **DataFort Compatibility** — This license is required on the Brocade Encryption Switch/DCX/DCX-4S with FS8-18 blade(s) to read & decrypt NetApp DataFort-encrypted disk and tape LUNs. DataFort Compatibility License is also required on the Brocade Encryption Switch or DCX/DCX-4S Backbone with FS8-18 Encryption Blade(s) installed to write & encrypt the disk and tape LUNs in NetApp DataFort Mode (Metadata & Encryption Algorithm) so that DataFort can read & decrypt these LUNs. DataFort Mode tape encryption and compression is supported beginning with the FOS v6.2.0 release. Availability of the DataFort Compatibility license is limited; contact your vendor for details.
- **Server Application Optimization** — When deployed with Brocade Server Adapters, this license optimizes overall application performance for physical servers and virtual machines by extending virtual channels to the server infrastructure. Application specific traffic flows can be configured, prioritized, and optimized throughout the entire data center infrastructure. This license is not supported on the Brocade 8000.
- **FCoE** — This license enables Fibre Channel over Ethernet (FCoE) functionality on the Brocade 8000. Without the FCoE license, the Brocade 8000 is a pure L2 Ethernet switch and will not allow FCoE bridging or FCF capabilities. This license should always be installed with the 8000 FC Ports on Demand license.
- **8000 FC Ports on Demand** — This license enables all eight FC ports on the Brocade 8000. This license should always be installed with the FCoE license.
- **7800 Port Upgrade** — This license allows a Brocade 7800 to enable 16 FC ports (instead of the base four ports) and six GbE ports (instead of the base two ports). This license is also required to enable additional FCIP tunnels and also for advanced capabilities like tape read/write pipelining.
- **Advanced Extension** – This license enables two advanced extension features: FCIP Trunking and Adaptive Rate Limiting. The FCIP Trunking feature allows multiple IP source and destination address pairs (defined as FCIP Circuits) via multiple 1GbE or 10GbE interfaces to provide a high bandwidth FCIP tunnel and failover resiliency. In addition, each FCIP circuit supports four QoS classes (Class-F, Hi, Medium and Low Priority), each as a TCP connection. The Adaptive Rate Limiting feature provides a minimum bandwidth guarantee for each tunnel with full utilization of the available network bandwidth without impacting throughput performance under high traffic load. This license is available on the 7800 and the DCX/DCX-4S for the FX8-24 on an individual slot basis.
- **10GbE FCIP** – This license enables the two 10GbE ports on the FX8-24. With this license, two additional operating modes (in addition to 10 1GbE ports mode) can be selected:
    - 10 1GbE ports and 1 10GbE port, or
    - 2 10GbE ports

  This license is available on the DCX/DCX-4S for the FX8-24 on an individual slot basis.

- **Advanced FICON Acceleration** – This licensed feature uses specialized data management techniques and automated intelligence to accelerate FICON tape read and write and IBM Global Mirror data replication operations over distance, while maintaining the integrity of command and acknowledgement sequences. This license is available on the 7800 and the DCX/DCX-4S for the FX8-24 on an individual slot basis.

Some models offer bundles that include 2 or more optionally licensed features. These bundles are defined for each unique product, and are outside the scope of this release note document.

Temporary License Support

The following licenses are available for 45-day temporary use, with a maximum of two temporary licenses per feature and per switch (90 days maximum):

- Fabric (E_Port) license
- Extended Fabric license
- Trunking license
- High Performance Extension license
- Advanced Performance Monitoring license
- Adaptive Networking license
- Fabric Watch license
- Integrated Routing license
- Server Application Optimization license
- Advanced Extension license
- Advanced FICON Acceleration license
- 10GbE FCIP license

Note: Temporary Licenses for features available on a per slot basis enable the feature for any and all slots in the chassis.

Universal Temporary License Support

The following list of licenses are available as Universal Temporary licenses, meaning the same license key can be installed on any switch running FOS v6.3 or later that supports the specific feature. Universal Temporary license keys can only be installed once on a particular switch, but can be applied to as many switches as desired. Temporary use duration (the length of time the feature will be enabled on a switch) is provided with the license key. All Universal Temporary license keys have an expiration date upon which the license can no longer be installed on any unit.

- Fabric (E_Port) license
- Extended Fabric license
- Trunking license
- High Performance Extension license
- Advanced Performance Monitoring license
- Adaptive Networking license

- Fabric Watch license
- Integrated Routing license
- Server Application Optimization
- Advanced Extension license
- Advanced FICON Acceleration license
- 10GbE license
- FICON Management Server (CUP) license

Supported Switches

Fabric OS v6.4.1 supports the Brocade 300, 5410/5424/5450/5460/5470/5480/NC-5480, 4100, 4900, 5000, 5100, 5300, VA-40FC, 7500/7500E, 7600, 48000, Brocade Encryption Switch (BES), DCX/DCX-4S, 8000, and the 7800. All supported products are qualified for Native Connectivity in interopmodes 2 and 3 for deployment in M-EOS fabrics with the exception of the Brocade 4100 and 8000 and DCX/DCX-4S with one or more FCOE10-24 blades.

Access Gateway mode is also supported by Fabric OS v6.4.1, and is supported on the following switches: the Brocade 300, 5100, VA-40FC, 8000, 5450, 5460, 5470, 5480, NC-5480 and M5424.

Note: Although Fabric OS v6.4.1 can be installed on any of the switches noted above, always check your SAN, storage or blade server product support page or document to verify before installing on your switch. Use only FOS versions that are specified by the provider to ensure full support of your switch.

Standards Compliance

This software conforms to the Fibre Channel Standards in a manner consistent with accepted engineering practices and procedures. In certain cases, Brocade might add proprietary supplemental functions to those specified in the standards. For a list of FC standards conformance, visit the following Brocade Web site: *http://www.brocade.com/sanstandards*

The Brocade 8000 and FCOE10-24 blade conform to the following Ethernet standards:

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree
- IEEE 802.1w Rapid reconfiguration of Spanning Tree Protocol
- IEEE 802.3ad Link Aggregation with LACP
- IEEE 802.3ae 10G Ethernet
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1p Class of Service Prioritization and Tagging
- IEEE 802.1v VLAN Classification by Protocol and Port
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- IEEE 802.3x Flow Control (Pause Frames)

The following draft versions of the Converged Enhanced Ethernet (CEE) and Fibre Channel over Ethernet (FCoE) Standards are also supported on the Brocade 8000 and FCOE10-24 blade:

- IEEE 802.1Qbb Priority-based Flow Control
- IEEE 802.1Qaz Enhanced Transmission Selection
- IEEE 802.1 DCB Capability Exchange Protocol (Proposed under the DCB Task Group of IEEE 802.1 Working Group)
- FC-BB-5 FCoE (Rev 2.0)

Technical Support

Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information immediately available:

1. General Information
   - Technical Support contract number, if applicable
   - Switch model
   - Switch operating system version
   - Error numbers and messages received
   - **supportSave** command output and associated files
     - For dual CP platforms running FOS v6.2 and above, the supportsave command gathers information from both CPs and any AP blades installed in the chassis
   - Detailed description of the problem, including the switch or fabric behavior immediately following the problem, and specific questions
   - Description of any troubleshooting steps already performed and the results
   - Serial console and Telnet session logs
   - Syslog message logs
2. Switch Serial Number

   The switch serial number is provided on the serial number label, examples of which are shown here:

   The serial number label is located as follows:

   - Brocade 4100, 4900, and 7500/7500E — On the switch ID pull-out tab located inside the chassis on the port side on the left
   - Brocade Encryption Switch, VA-40FC, 300, 5000, 5100, and 5300 — On the switch ID pull-out tab located on the bottom of the port side of the switch
   - Brocade 7600 — On the bottom of the chassis
   - Brocade 7800 — On the pull-out tab on the front left side of the chassis underneath the serial console and Ethernet connection and on the bottom of the switch in a well on the left side underneath (looking from front)
   - Brocade 8000 — On the switch ID pullout tab located inside the chassis on the port side on the left and also on the bottom of the chassis
   - Brocade 48000 — Inside the chassis next to the power supply bays
   - Brocade DCX — Bottom right of the port side
   - Brocade DCX-4S — Back, upper left under the power supply

3. **World Wide Name (WWN)**

   When the Virtual Fabric feature is enabled on a switch, each logical switch has a unique switch WWN. Use the **wwn** command to display the switch WWN.

   If you cannot use the **wwn** command because the switch is inoperable, you can get the primary WWN from the same place as the serial number, except for the Brocade DCX/DCX-4S. For the Brocade DCX, access the numbers on the WWN cards by removing the Brocade logo plate at the top of the non-port side. The WWN is printed on the LED side of both cards.

4. **License Identifier (License ID)**

   There is only one License Identifier associated with a physical switch or director/backbone chassis. This License Identifier is required as part of the ordering process for new FOS licenses.

   Use the **licenseId** command to display the License Identifier.

FOS Migration Considerations

This section contains important details to consider before migrating to or from this FOS release.

TSBs - Critical Issues to Consider Prior to Installing This FOS Release

Technical Support Bulletins (TSBs) are produced to provide detailed information about high priority defects or issues present in FOS releases. The following sections specify all current TSBs that have been identified as being a risk to or resolved with this specific version of Fabric OS. Please review carefully and refer to the complete TSB for relevant issues prior to migrating to this version of code. TSBs can be found at http://my.brocade.com under the "*Technical Documentation*" section of the "*documentation*" tab.

TSB Issues Outstanding in FOS v6.4.1

Issues in the following list of TSBs are known to be potential risks to using FOS v6.4.1 and should be considered carefully prior to using this release of code:

TSB	Summary
None	There are no current TSBs outstanding for this FOS release.

TSB Issues Resolved in FOS v6.4.1

Issues in the following list of TSBs are known FOS v6.4.x risks that are not exposures in FOS v6.4.1. Note that the issues addressed in this list of TSBs may also be resolved in other FOS releases. Refer to the specific Release Notes for each release to verify resolution details.

TSB	Summary
None	There are no TSBs currently issued for FOS v6.4 releases.

Recommended Migration Paths to FOS v6.4.1

Migrating from FOS v6.2.x

For units currently operating at FOS v6.2.x, it is recommended to use FOS v6.3.0d, 6.3.1b (or later) or v6.3.2 prior to migrating to FOS v6.4.1.

Migrating from FOS v6.3.x

For units currently operating at FOS v6.3.x, there are no special steps required to migrate to FOS v6.4.1.

FOS Upgrades and Downgrades

Non-disruptively upgrading to Fabric OS v6.4 is only allowed from Fabric OS v6.3. This policy to support only one-level non-disruptive migration, which began with FOS v6.0.0, provides more reliable and robust migrations for customers. By having fewer major changes in internal databases, configurations, and subsystems, the system is able to perform the upgrade more efficiently, taking less time and ensuring a truly seamless and non-disruptive process for the fabric. The one-release migration policy also reduces the large number of upgrade/downgrade permutations that must be tested, allowing Brocade to spend more effort ensuring the supported migration paths are thoroughly and completely verified.

Disruptive upgrades to Fabric OS 6.4 are allowed and supported from FOS 6.2 and 6.3 (up to a two-level migration).

If there are multiple node EGs (encryption groups) in a fabric, please complete firmwaredownload on one node at a time before downloading on another node.

The Brocade 8000 does not support non-disruptive hot code loads (HCL). Upgrading the Brocade 8000 to FOS v6.4 will be disruptive to the IO through the switch.

A code load of DCX or DCX-4s with one or more FCOE10-24 blades will disrupt the traffic going through those FCOE10-24 blades.

Disable the ports in DCX Logical Switches that **use 10 bit addressing mode that have 8 bit areas in the range 0x70-0x8F before upgrading to FOS v6.4.x from 6.3.x.**. Otherwise firmware upgrade will fail with an error message. This step is necessary even if users do not plan to use FC8-64 blades after performing firmware upgrade to FOS v6.4. However, if areas 0x70-0x8F are not in use this step is not necessary. Please use portAddress CLI to find out the areas in use within a Logical Switch.

If **Bottleneck detection feature is currently enabled** on the switch running FOS v6.3.x, you must **disable it before upgrading to FOS v6.4**; otherwise, frame drops may occur due to increased Hot Code Load (HCL) time.

7800 platform and FX8-24 blade must be power cycled after upgrading from FOS v6.3 to FOS v6.4. This is necessary to load the new FPGA image that enables IPv6 capability for FCIP links to 7800 and FX8-24 blade. This step is mandatory even if IPv6 will not be used on the FCIP ports. Not performing this step will result in unpredictable behaviors on the FCIP links. Please note that in the case of FX8-24, only the FX8-24 blade needs to be power cycled and not the entire DCX/DCX-4S chassis.

Important Notes

This section contains information that you should consider before you use this Fabric OS release.

DCFM Compatibility

FOS v6.4 is compatible with Brocade's Data Center Fabric Manager (DCFM) v10.4 management software. DCFM is a comprehensive SAN management application that enables end-to-end management of Brocade Data Center Fabrics. It is the next-generation successor product to legacy Brocade management products (Brocade Fabric Manager (FM) and Brocade Enterprise Fabric Connectivity Manager (EFCM)).

DCFM 10.4 is available in three editions:

- ***DCFM Professional:*** a fabric management application that is ideally suited for small-size businesses that need a lightweight management product to manage their smaller fabrics. It manages one FOS fabric at a time and up to 1,000 switch ports. It provides support for Brocade FC switches, Brocade HBAs / CNAs, and Fibre Channel over Ethernet (FCoE) / Converged Enhanced Ethernet (CEE) switches.
- ***DCFM Professional Plus***: a SAN management application designed for medium-size businesses or departmental SANs for managing up to four physical or virtual fabrics (FOS, M-EOS and Mixed fabrics) and up to 2,560 switch ports. It supports Brocade backbone and director products (DCX-4S, 48Ks, etc.), FC switches, Fibre Channel Over IP (FCIP) switches, Fibre Channel Routing (FCR) switches/ Integrated Routing (IR) capabilities, Fibre Channel over Ethernet (FCoE) / Converged Enhanced Ethernet (CEE) switches, and Brocade HBAs / CNAs.
- ***DCFM Enterprise*:** a management application designed for enterprise-class SANs for managing up to 24 physical or virtual fabrics and up to 9,000 switch ports. DCFM Enterprise supports all the hardware platforms and features that DCFM Professional Plus supports, and adds support for the Brocade DCX Backbone and Fiber Connectivity (FICON) capabilities.

DCFM 10.4 now includes introductory support for FOS switches or fabrics using Administrative Domains (ADs). These details and more about DCFM's new enhancements can be found in the DCFM 10.4 Release Notes, DCFM 10.4 User Guide, and DCFM 10.4 Installation, Migration, & Transition Guide.

EFCM and Fabric Manager Compatibility

With the introduction of DCFM, both EFCM and Fabric Manager (FM) have been put into sustaining mode. Consequently, **neither EFCM nor FM are qualified or supported for management of switches operating with FOS v6.3 and later firmware versions**. Very basic evaluation has shown that there are significant compatibility issues between FM and FOS v6.3, including (but not limited to) compromised functionality in the zoning dialog and performance graphs, port enabling/disabling, and the FICON wizard. Similar issues are anticipated to be present when managing FOS v6.4 with FM.

WebTools Compatibility

FOS v6.4 is qualified and supported only with JRE 1.6.0 Update 16.

SMI Compatibility

- FOS v6.4 is supported with SMI-S agent 120.11.0.
- FOS v6.4 is supported with SMI-S Agent integrated with DCFM 10.4

Fabric OS Compatibility

The following table lists the earliest versions of Brocade software supported in this release, that is, the *earliest* supported software versions that interoperate. Brocade recommends using the *latest* software versions to get the greatest benefit from the SAN.

To ensure that a configuration is fully supported, always check the appropriate SAN, storage or blade server product support page to verify support of specific code levels on specific switch platforms prior to installing on your switch. Use only FOS versions that are supported by the provider.

When using the Virtual Fabrics feature, it is highly recommended that all switches participating in a fabric with a logical switch use the latest firmware available for those switches. All switches must be operating at minimum firmware levels noted in the FOS Interoperability table below.

For a list of the effective end-of-life dates for all versions of Fabric OS, visit the following Brocade Web site:

http://www.brocade.com/support/end_of_life.jsp

Supported Products and FOS Interoperability	
Brocade 2000-series switches	Not supported, end of support (December 2007)
Brocade 3200, 3800	Not supported
Brocade 3000	v3.2.1c [1] [6] [7]
Silkworm 3016, 3250, 3850 and Brocade 3900, 4100, 4900, 24000, 7500, 7500E, 5000, 200E, 48000	v5.3.2 (2G and 4G platforms) and v6.1.0e and later [5] (4G platforms only)
Silkworm 12000	v5.0.x [6] [7]
Brocade 4012, 4016, 4018, 4020, 4024, 4424	v5.3.1b, v6.1.0e and later [5]
Brocade 5470	v6.3.1 and later
Brocade 5410, 5480, 5424	v6.2.0 and later
Brocade 8000	v6.1.2_CEE1 or later
Brocade 7800, DCX and DCX-4S with FCOE10-24 or FX8-24 blades	v6.3 and later
Brocade DCX and DCX-4S with FC8-64 blade	v6.4
Brocade DCX, 300, 5100, 5300	v6.1.0e and later [5]
VA-40FC	v6.2.1_vfc, v6.2.2, v6.3.1, v6.4
Brocade DCX-4S	v6.2.0 and later
Brocade DCX with FS8-18 blade(s), Brocade Encryption Switch	v6.1.1_enc and later
Brocade DCX/DCX-4S/48000 with FA4-18 blade(s), Brocade 7600	v5.2.x or later (DCX requires v6.0.x or later, DCX-4S requires 6.2.x or later)
Mi10k, M6140, ED-6064, ES-3232, ES-4300, ES-4400, ES-4500, ES-4700 (McDATA Fabric Mode and Open Fabric Mode) [2] [4]	M-EOS v9.9.5 or later [3]
McDATA ED-5000 32-port FC director	Not Supported
Multi-Protocol Router interop	
Brocade 7420	XPath v7.4.1 [8]

Brocade 7500 and FR4-18i blade	v5.1.0 and higher [8]
McDATA SANRouters 1620 and 2640	Not Supported

Table Notes:

[1] All zoning and fabric operations performed in a fabric with products running older versions of FOS should be done via interfaces to products running the latest version of FOS. This is particularly important for Brocade 3XXX series switches that do not support zoning configuration for newer products.

[2]Other M-EOS models may participate in a fabric with FOS v6.4, but may not be directly attached via E_Port to any products running FOS v6.4. The McDATA ED-5000 director may not participate in a mixed M-EOS/FOS fabric.

[3] It is highly recommended that M-EOS products operate with the most recent version of M-EOS released and supported for interoperability. M-EOS 9.7.2 is the minimum version of firmware that is supported to interoperate with FOS 6.4. For support of frame redirection in McDATA Fabric Mode (interopmode 2), M-series products must use M-EOS v9.8 or later. For support of frame redirection in McDATA Open Fabric Mode (interopmode 3), M-series products must use M-EOS v9.9 or later. Only the ES-4400, ES-4700, M6140, and Mi10k may have devices directly attached that are having data encrypted or unencrypted.

[4]When routing to an M-EOS edge fabric using frame redirection, the M-EOS fabric must have a FOS-based product in order to configure the frame redirection zone information in the edge fabric.

[5]When directly attached to a Host or Target that is part of an encryption flow.

[6]Products operating with FOS versions less than v5.3.1b or v6.1.0e may not participate in a logical fabric that is using XISLs (in the base fabric).

[7]These platforms may not be directly attached to hosts or targets for encryption flows.

[8]McDATA 1620 and 2640 SANRouters should not be used with XPath or FOS-based routing (FCR) for connections to the same edge fabric. A switch running FOS v6.4 should not be connected to an E-port on an AP7420. A switch in interopmode 0 (Brocade Native Mode) with FOS v6.4 should not be connected to an EX_Port on an AP7420. Please see important notes for additional details.

Blade Support

Fabric OS v6.4 software is fully qualified and supports the blades for the 48000 platform noted in the following table:

48000 Blade Support Matrix	
Port blade 16, 32 and 48-port 4Gbit blades (FC4-16, FC4-32, FC4-48), 16, 32 and 48-port 8Gbit blade (FC8-16, FC8-32, FC8-48), and the 6-port 10G FC blade (FC10-6)	Supported with any mix and up to 8 of each. No restrictions around intermix. The 48000 must run Fabric OS v6.0 or later to support the FC8-16 port blade and Fabric OS v6.1 or later to support the FC8-32 and FC8-48 port blades. **Note:** FC8-64 is not supported on 48000.
Intelligent blade	Up to a total of 4 Intelligent blades (includes iSCSI, FCIP/FCR and Application blade), FC4-16IP, FR4-18i, and FA4-18 respectively. See below for intermix limitations, exceptions, and a max of each blade.
iSCSI blade (FC4-16IP)	Up to a maximum of 4 blades of this type.
FC-IP/FC Router blade (FR4-18i)	Up to a maximum of 2 blades of this type. This can be extended under special circumstances but must be approved by Brocade's Product Team. Up to 8 FR4-18i blades can be installed if they are used only for FC FastWrite or FCIP without routing.
Virtualization/Application Blade (FA4-18)	Up to a maximum of 2 blades of this type.
Encryption Blade (FS8-18), Extension Blade (FX8-24), FCoE/CEE Blade (FCOE10-24)	Not supported.

Fabric OS v6.4 software is fully qualified and supports the blades for the DCX/DCX-4S noted in the following table:

DCX/DCX-4S Blade Support Matrix	
16-, 32, 48 and 64-port 8Gbit port blades (FC8-16, FC8-32, FC8-48, FC8-64) and the 6-port 10G FC blade (FC10-6)	16, 32 and 48 port blades are supported with FOS v6.0 and above, 64 port blade is supported starting with FOS v6.4.0, with any mix and up to 8/4 of each. No restrictions around intermix.
Intelligent blade	Up to a total of 8/4 intelligent blades. See below for maximum supported limits of each blade.
FC-IP/FC Router blade (FR4-18i)	Up to a maximum of 4 blades of this type. This can be extended under special circumstances, but must be approved by Brocade's Product Team. Up to 8 FR4-18i blades can be installed in a DCX if they are used only for FC FastWrite or FCIP without routing.
Virtualization/Application Blade (FA4-18)	Up to a maximum of 4 blades of this type.

DCX/DCX-4S Blade Support Matrix	
Encryption Blade (FS8-18)	Up to a maximum of 4 blades of this type.
Extension Blade (FX8-24)	Up to a maximum of 4 blades of this type.
FCoE/CEE Blade (FCOE10-24)	Up to a maximum of 2 blades of this type. Cannot be used in a chassis with other intelligent blades (can only be installed concurrently with FC8-XX and/or FC10-6 blades). Cannot be used in a DCX/DCX-4S chassis with FC8-64 blade in FOS v6.4.

Note: the iSCSI FC4-16IP blade is not qualified for the DCX/DCX-4S.

Power Supply Requirements for Blades in 48k and DCX/DCX-4S Chassis					
Blades	**Type of Blade**	**48K** @200-240 VAC (Redundant configurations)	**DCX/DCX-4S** @110 VAC (Redundant configurations)	**DCX/DCX-4S** @200-240 VAC (Redundant configurations)	**Comments**
FC4-16, FC 4-32, FC4-48, FC8-16, FC8-32	Port Blade	2 Power Supplies	2 Power Supplies	2 Power Supplies	• Distribute the Power Supplies evenly to 2 different AC connections for redundancy.
FC10-6, FC8-16, FC8-32, FC 8-48, ***FC8-64***[1]	Port Blade	4 Power Supplies	Not Supported	2 Power Supplies	
FR4-18i, FC4-16IP[2], FA4-18	Intelligent Blade	4 Power Supplies	Not Supported	2 Power Supplies	
FS8-18, FX8-24, FCOE10-24	Intelligent Blade	N/A	Not Supported	DCX: 2 or 4 Power Supplies DCX-4S: 2 Power Supplies	• For DCX with three or more FS8-18 Blades, (2+2) 220VAC Power Supplies are required for redundancy. • For DCX with one or two FS8-18 Blades, (2) 220VAC Power Supplies are required for redundancy. • For DCX-4S, (2) 220VAC Power Supplies provide

[1] FC8-64 is not supported on 48K

[2] FC4-16IP is not supported on DCX/DCX-4S

Power Supply Requirements for Blades in 48k and DCX/DCX-4S Chassis					
Blades	**Type of Blade**	**48K** @200-240 VAC (Redundant configurations)	**DCX/DCX-4S** @110 VAC (Redundant configurations)	**DCX/DCX-4S** @200-240 VAC (Redundant configurations)	**Comments**
					redundant configuration with any number of FS8-18 Blades. • For both DCX and DCX-4S with FX8-24 blades, (1+1) 220VAC Power Supplies are required for redundancy.

FOS Feature Compatibility in Native Connectivity Modes

Some FOS features are not fully supported when operating in the native connectivity modes for deployment with M-EOS based products. All Brocade models that are supported by Fabric OS v6.4 support both interopmodes 2 and 3 with the exception of the Brocade 4100 and 8000 and DCX/DCX-4S with one or more FCOE10-24 blades.

The following table specifies the support of various FOS features when operating in either interopmode 2 (McDATA Fabric Mode) or interopmode 3 (Open Fabric Mode) with Fabric OS v6.4.

FOS Features (supported in interopmode 0)	**FOS v6.4**	
IM = Interopmode	**IM 2**	**IM 3**
L2 FOS Hot Code Load	Yes	Yes
FOS Hot Code Load with FCR	Yes	Yes
Zone Activation Support	Yes	Yes[11]
Traffic Isolation Zones[1]	Yes	No
Frame Redirection (devices attached to FOS)[1]	Yes	Yes[11]
Frame Redirection (devices attached to M-EOS) [1]	Yes	Yes[11]
Frame Redirection over FCR[10]	Yes	Yes[11]
FCR Fabric Binding (route to M-EOS fabric with Fabric binding) [9]	Yes	Yes
L2 Fabric Binding	Yes	No*
DCC policies	No	No
SCC policies	Yes[4]	No*
E/EX_Port Authentication	Yes	Yes
ISL Trunking (frame-level)	Yes[2]	Yes[2]
Dynamic Path Selection (DPS, exchange based routing)	Yes[3]	Yes[3]
Dynamic Load Sharing (DLS, port based routing)	Yes	Yes
Virtual Channels (VC RDY)	Yes[2]	Yes[2]
FICON Management Server (Cascading)	Yes	No*
FICON MIHPTO	Yes	No*
Full Scalability (to maximum M-EOS fabric limits)	Yes	Yes

FOS Features (supported in interopmode 0)	**FOS v6.4**	
IM = Interopmode	**IM 2**	**IM 3**
Adaptive Networking: QoS	No	No
Adaptive Networking: Ingress Rate Limiting	No*	No*
Advanced Performance Monitoring (APM)	No*	No*
APM: TopTalkers	No*	No*
Admin Domains	No	No
Secure Fabric OS[5]	N/A	N/A
Fabric Watch	Yes	Yes
Ports on Demand (POD)	Yes	Yes
NPIV	Yes	Yes
Timer Server function (NTP)	No	No
Open E_Port[6]	N/A	N/A
Broadcast Zoning	No	No
FDMI	No	No
Remote Switch	No	No
Port Mirroring	Yes	Yes
Extended Fabrics	Yes	Yes[7]
Alias Server	No	No
Platform Service	No	No
FCIP (VE_Ports)	Yes	Yes
IPFC (IP over FC)	Yes[8]	Yes[8]
M-EOS ALPA 0x13 configuration	Yes	Yes
VE to VEX Port	Yes	Yes
Integrated Routing[9]	Yes[9]	Yes
Domain Offset Support	Yes	Yes
239 Domain Support (available on Mi10k only)	N/A	Yes
Masterless F_PORT Trunking (AG connect to FOS switches only)	Yes	Yes
FC10-6-to-FC10-6 ISL	Yes	Yes
RASLOG Events on duplicate WWNs	Yes	Yes
Virtual Fabrics	Yes	Yes
Logical Fabric using LISLs (XISLs in Base Fabric)	No	No
Port Fencing	Yes	Yes
Bottleneck Detection	Yes	Yes
Lossless DLS	No	No

* indicates the feature is available but not officially tested or supported

1. Requires M-EOS 9.7 or later for redirection between devices attached to FOS switches, M-EOS 9.8 for redirection between devices attached to M-EOS switches, M-EOS 9.9 for use in McDATA Open Fabric Mode. Supported M-EOS platforms include M4400, M4700, M6140, and Mi10k.
2. Only allowed between FOS-based switches.
3. DPS is supported outbound from FOS-based switches. (M-EOS can provide reciprocal load balancing using OpenTrunking).
4. SCC policies only supported in conjunction with L2 Fabric Binding support.
5. Not supported in FOS 6.0 or later.
6. Mode 3 only qualified with M-EOS switches.
7. Not on FCR.
8. Only supported locally within the FOS switch.
9. All routers (EX_Ports) must reside in a backbone fabric running in interopmode 0 only. Only edge fabrics with devices imported to the backbone fabric or other edge fabrics may be operating in IM2 or IM3.

10. To support Frame Redirection to an edge M-EOS fabric, there must be at least one FOS switch in the edge fabric to configure Frame Redirection Zones.
11. Only Frame Redirection Zones may be configured on FOS platforms and sent to fabrics operating in McDATA Open Fabric Mode (interopmode 3). M-EOS 9.9 is required to support FR Zones in McDATA Open Fabric Mode.

Note: FICON Cascaded CUP with M-EOS and FOS qualified only on select platforms.

SAS Version Requirements for FA4-18 and Brocade 7600

Note: The SAS firmware version compatible with FOS v6.4.1 will be announced at a future date.

Scalability

All scalability limits are subject to change. Limits may be increased once further testing has been completed, even after the release of Fabric OS. For current scalability limits for Fabric OS, refer to the *Brocade Scalability Guidelines* document, available under the *Technology and Architecture Resources* section at http://www.brocade.com/compatibility

Other Important Notes and Recommendations

Management Server Platform Capability support changes in FOS v6.4

FOS v6.4 no longer automatically enables the Management Server (MS) Platform capability when a switch attempts to join a fabric that has these services enabled. This prevents a FOS v6.4 switch from joining such a fabric, and ISL will be disabled with a RAS log message. To allow a FOS v6.4 switch to join such fabrics msPlMgmtActivate command should be used to enable the Management Server platform services explicitly.

FCIP, FCIP Trunking and High Bandwidth (Brocade 7800 and FX8-24)

- IPsec is not supported on XGE0 of FX8-24 blade starting with FOS v6.4. IPsec is supported on XGE1 and GE0 through GE9.
- IPsec is supported on FCIP tunnels that use only IPV4 connections.
- FICON networks with FCIP tunnels do not support DPS (aptpolicy 3) configurations. This applies to both emulating and non-emulating FCIP tunnels.
- The maximum supported MTU size for the Brocade 7800/FX8-24 is 1500.
- FCIP connections are supported only between the Brocade 7800/FX8-24 and another 7800/FX8-24. FCIP tunnels are not supported between the 7800/FX8-24 and the previous generation Brocade 7500/FR4-18i platforms.
- When multiple FCIP tunnels are present on a switch and additional circuits (and the network bandwidth provided by those circuits) are added to an already active tunnel, there may be a short period of time where some frame loss can occur due to the process to re-fresh the internal FC frame routing tables in the switch. Therefore, additional circuits should only be added during low I/O periods utilizing the FCIP Tunnel being modified. In addition, if the circuit operation (addition/deletion) to the tunnel increases/decreases the total tunnel bandwidth, an FCIP Tunnel (VE port) disable/enable sequence should be performed after the addition/deletion of the circuit. This will allow the switch to adjust the internal routes to utilize the new bandwidth fully.
- Switching modes between 10G and 1G is disruptive for FCIP traffic.
- Keep alive timeout (milliseconds) - Valid range is 500ms to 7,200,000ms (inclusive). FOS default value is 10000ms (10 seconds). If FICON is configured the recommended value is 1000 ms (1 second), otherwise the recommended value is the default of 10 seconds. For impairment networks with 100ms latency and 0.5% packet loss, keep-alive time out should be configured as 30seconds. If the local and remote circuit configurations' Keep Alive Timeout values do not match, the tunnel will use the lower of the two configured values.
- Software compression (available on the 7800 and FX8-24) modes 2 and 3 are only supported in Open Systems environments.
- In order to perform the following operations it is necessary to delete the FCIP configuration on the affected ports first:
    - Switching modes between 1G/10G/Dual.
    - Moving VE/GE port between logical switches.
- ARL (Adaptive Rate Limiting) is not supported on 10G tunnels.
- "Inband Management" is not supported on the Brocade 7800.
- FOS v6.4 only supports up to four 1 Gig Circuits per VE/FCIP Tunnel for the 1 gig interfaces. A VE/FCIP Tunnel created over the 10 Gig Interfaces will be limited to 10

circuits created using IPIFs on the same 10 GbE port (and no more than 1G per circuit).As a recommended best practice, the VE tunnel shouldn't be over-subscribed (e.g. 8G FC traffic over 500Mbps tunnel). General guidelines are 2:1 subscription without compression and 4:1 with compression.

- Non-disruptive firmware activation will disrupt I/O traffic on FCIP links.
- Differences between the Brocade 7800/FX8-24 platforms and previous generation 7500/FR4-18i platforms include:
    - On the 7800, the GbE port does not directly correlate to a VE port
    - On the FX8-24, GbE ports 0-9 or 10GbE port 1 (xge1) correspond to VE ports 12-21, and 10 GbE port 0 (xge0) corresponds to VE ports 22-31
    - The CLI syntax for the 7800/FX8-24 varies from the 7500/FR4-18i. Please refer to the *Brocade Fabric OS Command Reference* document for FOS v6.4 for details
- Under Traffic Isolation Zone, configurations with fail over enabled, Non-TI zone traffic will use the dedicated path if no other E or VE paths through the fabric exist, or if the non-dedicated paths are not the shortest paths. (A higher bandwidth tunnel with multiple circuits will become shortest path compared to a single tunnel).
- A VE/VEX Tunnel and E/EX FC port cannot connect to the same domain at the same time.
- The recommended Keep Alive Timeout must be the same on tunnel/circuits on the switches on both sides of a link.
- Latency measurements supported on FCIP Tunnels:
    - 1GbE - 200ms round trip time and 1% Loss
    - 10GbE – 100ms round trip and 0.1% Loss
- Brocade 7800 supports Optical and Copper Media types on GE0 and GE1 interfaces. Copper Media type is default on GE0/GE1 ports and does not support auto-sense functions.
- After inserting a 4G SFP in GE ports of an FX8-24 blade or 7800 switch, sometimes "sfpshow" output might display "Can not read serial data!" . Removing and re-inserting the SFP should resolve this issue. It is recommended that users perform sfpshow immediately after inserting the SFP and ensure SFP is seated properly before connecting the cables.
- When running FOS v6.4.0 or later, if any of the following features are enabled in the FCIP configuration, a downgrade operation below FOS v6.4.0 will be blocked until the features are removed from the FCIP config:
    - IPv6
    - IPSec on the FX8-24
    - DSCP Markings
    - Advanced Compression options 2 and 3 on the FX8-24
    - VEX ports on the FX8-24

FCIP (Brocade 7500 and FR4-18i)

- When configuring an FCIP Tunnel to use VLAN tagging on a 7500 or FR4-18i, a static ARP entry must be configured on the 7500/FR4-18i GE interface for the local gateway. Also a static ARP entry must be added in the local gateway for the 7500/FR4-18i GE port.

FCoE/CEE (Brocade 8000 and FCOE10-24)

- The Brocade 8000 balances the FCoE bandwidth across all six port groups (each port group contains four ports). To get optimum performance for FCoE traffic it is recommended that the user distribute server CNA connections across these six port groups.
- Hot plugging a CP with firmware level less than FOS v6.3.0 into a DCX or DCX-4S with an active FCOE10-24 blade will result in the new standby CP not coming up.
- Brocade recommends that Converged Mode be enabled on all interfaces connected to CNAs.
- When operating in Converged Mode, tagged traffic on the native VLAN of the switch interface is processed normally. The host should be configured not to send VLAN tagged traffic on the switch's native VLAN.
- When operating in Converged Mode, tagged frames coming with a VLAN tag equal to the configured native VLAN are dropped.
- The Converged Network Adapter (CNA) may lose connectivity to the Brocade 8000/FCOE10-24 if the CNA interface is toggled repeatedly over time. This issue is related to the CNA and rebooting the CNA restores connectivity.
- Although the Brocade 8000 and FCOE10-24 support the configuration of multiple CEE maps, it is recommended to use only one CEE map on all interfaces connected to CNAs. Additionally, CEE maps are not recommended for use with non-FCoE traffic. QoS commands are recommended for interfaces carrying non-FCoE traffic.
- It is recommended that Spanning Tree Protocol and its variants be disabled on CEE interfaces that are connected to a server.
- The Fabric Provided MAC Address (FPMA) and the Fibre Channel Identifier (FCID) assigned to a VN_Port cannot be associated with any single front-end CEE port on which the FLOGI was received.
- LLDP neighbor information may be released before the timer expires when DCBX is enabled on a CEE interface. This occurs only when the CEE interface state changes from active to any other state. When the DCBX is not enabled, the neighbor information is not released until the timer expires, irrespective of the interface state.
- The FCoE Login Group Name should be unique in a fabric wide FCoE Login Management Configuration. The merge logic is designed to modify the Login Group Name during merge when Login group names in participating configurations conflict with each other. The current OUI of 00051E is being used by Brocade, while assigning the WWNs to 8000s, DCXs and DCX4Ss, which would make only the last 3 bytes as different for any two 8000s, DCXs or DCX4Ss. Considering this assignment method, the merge logic would rename the login group by including the last 3 bytes of WWN in the login group name, so that they are unique in the merged configuration.
- For switches having different OUI indices from the 8 assigned to Brocade (for ex: 00051E and 006069), WWNs can differ in more than 3 bytes. In this case, after normal merge and a rename as per above described logic, login group names can be the same for WWNs differing only in OUIs. The merge logic would drop one of the Login Groups to satisfy the requirement to keep the Login Group Name unique in the fabric wide configuration.
- Ethernet switch services must be explicitly enabled using the command "*fosconfig –enable ethsw"* before powering on an FCOE10-24 blade. Failure to do so will cause the blade to be faulted (fault 9). Users can enable ethsw after upgrading firmware without FC traffic interruption.
- The Brocade 8000 does not support non-disruptive hot code loads (HCL). Upgrading the Brocade 8000 to FOS 6.4 or downgrading from v6.4 is disruptive to the IO through the switch.
- A code load on a DCX or DCX-4s with one or more FCOE10-24 blades will disrupt the traffic going through those FCOE10-24 blades.

- HA Failover of CP blades in DC*X* or DCS-4s will also result in disruption of traffic through the FCOE10-24 blades.
- Connecting a Brocade 8000 to an FCR-capable switch with fcrbcast config enabled will cause a storm of broadcast traffic resulting in termination of iswitchd.
- When rebooting a DCX or DCX-4S with an FCOE10-24 blade, Qlogic CNA and LSAN zoning, the switch will become very unresponsive for a period of time. This is due to the CNA sending excessive MS queries to the switch.
- An FCOE10-24 blade installed in the highest numbered slot of a DCX or DCX-4S chassis does not send out FIP unsolicited advertisements. Therefore, it does not support FCoE functionality when installed in this slot.
- The Brocade 8000 and FCOE10-24 can handle 169 small FCoE frames in bursts. If you are using the Brocade 8000 or FCOE10-24, and you delete a large number of v-ports with HCM, some of the v-ports may not appear to be deleted. To correct this, disable and re-enable FCoE with the following CLI commands:

  ```
  switch:admin>fcoe --disable
  switch:admin>fcoe --enable
  ```

Virtual Fabrics

- On Virtual Fabrics capable platforms, the Virtual Fabrics feature must be enabled in order to utilize the related capabilities including Logical Switches and Logical Fabrics. On units that ship with FOS v6.3 installed, the Virtual Fabrics feature is enabled by default on capable platforms.
- When creating Logical Fabrics that include switches that are not Virtual Fabrics capable, it is possible to have two Logical Switches with different FIDs in the same fabric connected via a VF incapable switch. Extra caution should be used to verify the FIDs match for all switches in the same Logical Fabric.
- A switch with Virtual Fabrics enabled may not participate in a fabric that is using Password Database distribution or Administrative Domains. The Virtual Fabrics feature must be disabled prior to deploying in a fabric using these features.
- Virtual Fabrics is not supported on Brocade 7800.
- VF dedicated ISLs are supported on FX8-24 blade. XISLs are not supported.

Licensing Behavior

- When operating a switch with Fabric OS v6.3, some licenses may display as "Unknown." This is due to changes in licensing requirements for some features that no longer require a license key that may still be installed on a switch.
- If a Universal temporary license is enabled for a slot-based license feature, the license expiration date displays as "NA" in Web Tools. Use the **licenseshow** command to display the correct expiration date.

Encryption Behavior for the Brocade Encryption Switch (BES) and FS8-18

- Configuration limits when using IBM's Tivoli Key Lifecycle Manager V2 (TKLM):
  - Maximum of 6 Encryption nodes per Windows/Linux TKLM server.
  - Maximum of 10 Encryption nodes per AIX TKLM server.
  - Maximum of 16 tape sessions per Encryption node.
  - Minimum of 180 second timeout for tape hosts.

- Disk Encryption Rekey: Configupload/download does not retain the auto rekey value. The first auto rekey after configdownload will occur based on the previously configured key life. The newly configured key life value (as part of configdownload) will be used after the first auto rekey. (Defect 315174)
- Disk encryption is not support for IBM iSeries (AS/400) hosts.
- 3Par Session/Enclosure LUNs to CTCs are now supported. Session/Enclosure LUNs (LUN 0xFE) used by 3Par InServ arrays must be added to CryptoTarget (CTC) containers with LUN state "cleartext", encryption policy "cleartext". No enforcement will be performed.
- The "*cryptocfg –manual_rekey –all*" command should not be used in environments with multiple encryption engines (FS8-18 blades) installed in a director-class chassis when more than one encryption engine has access to the same LUN. In such situations, use the "*cryptocfg –manual_rekey <CTC> <LUN Num> <Initiator PWWN>"* command to manually rekey these LUNs.
- When adding Nodes to an Encryption Group, ensure all Node Encryption Engines are in an Enabled state.
- When host clusters are deployed in an Encryption environment, please note the following recommendations:
    - If two EEs (encryption engines) are part of a HAC, configure the host/target pair such that they form a multipath from both EEs. Avoid connecting both the host/target pairs to the same EE. This connectivity does not give full redundancy in case of EE failure resulting in HAC failover.
    - Since quorum disk plays a vital role in keeping the cluster in sync, please configure the quorum disk to be outside of the encryption environment.
- The "–key_lifespan" option has no effect for "cryptocfg –add –LUN", and only has an effect for "cryptocfg –create –tapepool" for tape pools declared "-encryption_format native". For all other encryption cases, a new key is generated each time a medium is rewound and block zero is written or overwritten. For the same reason, the "Key Life" field in the output of "cryptocfg –show -container -all –stat" should always be ignored, and the "Key life" field in "cryptocfg –show –tapepool –cfg" is only significant for native-encrypted pools.
- The Quorum Authentication feature requires a compatible DCFM release (DCFM 10.3 or later) that supports this feature. Note, all nodes in the EG must be running FOS v6.3.0 or later for quorum authentication to be properly supported.
- The System Card feature requires a compatible DCFM release that supports this feature. Note, all nodes in the EG must be running FOS v6.3.0 or later for system verification to be properly supported.
- The Brocade Encryption switch and FS8-18 blade do not support QoS. When using encryption or Frame Redirection, participating flows should not be included in QoS Zones.
- When using Brocade Native Mode, in LKM installations, manual rekey is highly recommended. If auto rekey is desired, the key expiry date should be configured only when the LUN is created. Never modify the expiry date after configuring a LUN. If you modify the expiry time, after configuring the LUN the expiration date will not update properly.
- SKM is supported with Multiple Nodes and Dual SKM Key Vaults. Two-way certificate exchange is supported. Please refer to the Encryption Admin Guide for configuration information. If using dual SKMs on BES/FS8-18 Encryption Group, then these SKM Appliances must be clustered. Failure to cluster will result in key creation failure. Otherwise, register only one SKM on the BES/FS8-18 Encryption Group.
- For dual LKM configuration on the Brocade Encryption Switch (BES) or a DCX/DCX-4S with FS8-18 blades as the primary and secondary key vaults, these LKM appliances must be clustered (linked). Failure to cluster will result in key creation failure. Otherwise, register only one LKM on the

BES/FS8-18 Encryption Group. Please refer to the Encryption Admin Guide for configuration information.

- The RKM Appliance A1.6, SW v2.7 is supported. The procedure for setting up the RKM Appliance with BES or a DCX/DCX-4S with FS8-18 blades is located in the Encryption Admin Guide.
- Support for registering a 2nd RKM Appliance on BES/FS8-18 is blocked. If the RKM Appliances are clustered, then the virtual IP address hosted by a 3rd party IP load balancer for the RKM Cluster must be registered on BES/FS8-18 in the primary slot for Key Vault IP.
- With Windows and Veritas Volume Manager/Veritas Dynamic Multipathing, when LUN sizes less than 400MB are presented to BES for encryption, a host panic may occur and this configuration is not supported in the FOS v6.3.1 or later release.
- HCL from FOS v6.3.x to v6.4 is supported. Cryptographic operations and I/O will be disrupted but other layer 2 traffic will not.
- Relative to the BES and a DCX with FS8-18, all nodes in the Encryption Group must be at the same firmware level of FOS v6.2 or later before starting a rekey or First Time Encryption operation. Make sure that existing rekey or First Time Encryption operations complete before upgrading any of the encryption products in the Encryption Group. Also, make sure that the upgrade of all nodes in the Encryption Group completes before starting a rekey or First Time Encryption operation.
- To clean up the stale rekey information for the LUN, follow one of the following two methods:

  Method 1:

  1. First, modify the LUN policy from "encrypt" to "cleartext" and commit. The LUN will become disabled.
  2. Enable the LUN using "cryptocfg --enable –LUN". Modify the LUN policy from "clear-text" to "encrypt" with "enable_encexistingdata" to enable the first time encryption and do commit. This will clear the stale rekey metadata on the LUN and the LUN can be used again for encryption.

  Method 2:

  1. Remove the LUN from Crypto Target Container and commit.
  2. Add the LUN back to the Crypto Target Container with LUN State="clear-text", policy="encrypt" and "enable_encexistingdata" set for enabling the First Time Encryption and commit. This will clear the stale rekey metadata on the LUN and the LUN can be used again for encryption.

- TEMS key vault support troubleshooting tips:
  - Regarding TEMS key vault (KV) communication with a Brocade encryption group, the default communication port setting for the TEMS KV is 37208, however, the Brocade encryption members and leader use 9000 so this needs to be reset on NCKA. Additionally, the following is a checklist of things to review if the initial attempt to connect to the KV fails:
    - Check physical and logical connection via a ping on port 9000, this should be the first check.
    - For the group leader node, the kac client cert and the kv cert files are to be identical.
    - For group member nodes the kv file is to be the same as the kv file on the group leader node.
    - Crosscheck to ensure the private key file corresponds to the kac public cert file on any node.

- When disk and tape CTCs are hosted on the same encryption engine, re-keying cannot be done while tape backup or restore operations are running. Re-keying operations must be scheduled at a time that does not conflict with normal tape I/O operations. The LUNs should not be configured with auto rekey option when single EE has disk and tape CTCs.
- Gatekeeper LUNs used by SYMAPI on the host for configuring SRDF/TF using in-band management must be added to their containers with LUN state as "cleartext", encryption policy as "cleartext" and without "-newLUN" option.
- For new features added to encryption in FOS v6.4.0, such as, disk device decommissioning, combined disk-tape encryption support on the same encryption engine, and redundant key ID metadata option for replication environments, all the nodes in the encryption group must be running FOS v6.4.0 or higher versions of FOS. Firmware downgrade will be prevented from FOS v6.4.0 to a lower version if one or more of these features are in use.
- Special Notes for HP Data Protector backup/restore application
  - Tape Pool encryption policy specification:
    - On Windows Systems, HP Data Protector can be used with tape pool encryption specification only if the following pool label options are used:
      - Pick from Barcode
      - User Supplied – Only 9 characters or less

      For other options, behavior defaults to Tape LUN encryption policy.
    - On HP-UX systems, HP Data Protector cannot be used with tape pool encryption specification for any of the pool options. The behavior defaults to Tape LUN Encryption Policy.
  - Tape LUN encryption policy specification:
    - No restrictions, tape LUN encryption policy specification can be used with HP Data Protector on HP-UX and Windows systems.
- For multi-pathed disk LUNs, the same key life period must be set for all LUN paths otherwise, auto rekey may be initiaed earlier than expected (defect 319097). Also when adding LUNs with multiple paths to the same EE, ensure that the identical key life period is used for all the paths to the LUN and that modifications of this value after initially set is avoided (defect 316100).
- Adding LUNs to a crypto target container that has already been committed will require a host to re-discover the LUN to see it (defect 318425).

Adaptive Networking/Flow-Based QoS Prioritization

- When using QoS in a fabric with 4G ports or switches, FOS v6.0 or later must be installed on all products in order to pass QoS info. E_Ports from the DCX to other switches must come up AFTER 6.0 is running on those switches.
- Flow based QoS is NOT supported on FC8 blades in the Brocade 48000.
- Any products that are not capable of operating with FOS 6.0 may NOT exist in a fabric with Flow based QoS. Major problems will occur if previous generation 2G products exist in the fabric.

Access Gateway

- When running Adaptive Networking in AG mode note the following:
  - QoS takes precedence over ingress rate limiting
  - Ingress Rate Limiting is not enforced on trunked ports

- Users who want to utilize Access Gateway's Device-based mapping feature in the ESX environments are encouraged to refer to the SAN TechNote GA-TN-276-00 for best implementation practices. Please follow these instructions to access this technote:
    - Log in to http://my.brocade.com
    - Go to Documentation > Tech Notes.
    - Look for the Tech Note on Access Gateway Device-Based Mapping in VMware ESX Server.

Bottleneck Detection

- Due to memory constraints, when using Bottleneck Detection on the Brocade 48000, a maximum of 100 ports should be configured and enabled for monitoring at any time.

FCR

- IPFC over FCR is now disabled by default. Switches that are upgraded to FOS v6.3 will retain their configuration settings for IPFC over FCR. The change to the default configuration only applies to new units shipping with FOS v6.3 or units running v6.3 that are reset to a default configuration. Use *fcrbcast - - enable* to explicitly enable IPFC over FCR.
- Broadcast frame forwarding is not supported in an FCR fabric with a Brocade 8000. By default, broadcast frame forwarding is disabled on the FC router. If your edge fabric includes a Brocade 8000, do not enable broadcast frame forwarding on the FC router because this can degrade FCR performance when there is excessive broadcast traffic.
- With FC8 blades, the switch must be disabled to change the backbone fabric ID.
- With routing and dual backbone fabrics, the backbone fabric ID must be changed to keep the IDs unique.
- When using FC Routing in a backbone to edge configuration with an Mi10K in the edge fabric, users may experience slow throughput for hosts attached to the Mi10K. Users may encounter this following a bounced IFL connection between the backbone and edge fabric. This slowdown can be resolved by disabling/enabling the Mi10K ports for the hosts that are impacted.
- Mi10K Directors operating with firmware prior to M-EOSn v9.9.5 may experience repeated system faults when attached as an FCR edge switch to a Brocade 7800 EX Port. To avoid this, ensure that the Mi10K is operating with M-EOSn v9.9.5 or later when in an edge fabric that will be attached to a Brocade 7800 FCR Backbone.
- VEX edge to VEX edge device sharing will not be supported.

FC FastWrite

- When an FC FastWrite Initiator is moved to a port that doesn't have FC FastWrite enabled, I/O will recover and revert to the slow path route (non FC FastWrite). This is a behavioral change from FOS v6.2.x.

Traffic Isolation over FCR

- All switches and Fibre Channel Routers both in edge and backbone fabrics must be running FOS v6.1.0 or later in order to support this feature.
- In order for Traffic Isolation over FCR to function properly, the associated TI zones in each fabric (both edge fabrics and backbone fabric) need to have failover ENABLED.
- TI over FCR is only supported in edge-to-edge configurations. There is no support for TI in backbone to edge routing configurations.

Integrated Routing

- To allow Hot Code Load on a Brocade 5100 when using Integrated Routing, the edge switch connected to the 5100 must be running Fabric OS v6.1 or later code.
- Integrated Routing EX_Ports are only supported in the base switch on a switch with VF enabled.
- Integrated Routing and TopTalkers (Fabric Mode) are not concurrently supported. To use Integrated Routing, be sure to disable Fabric Mode TopTalkers prior to configuring EX_Ports first.

Native Connectivity

- FOS-based platforms operating in interopmodes 2 or 3 should never be deployed in a fabric without at least one M-series switch. FOS switches in interopmode 3 (McDATA Open Fabric Mode) do not support configuration of zoning without an M-series switch in the fabric. When migrating from M-series to B-series switches, all B-series switches should be configured to interopmode 0 (Brocade Native mode) once the last M-series switch has been removed from the fabric.
- M-EOSc switches may exhibit a behavior where they block all attached devices with a reason indication of "Blocked Temporarily, Internal". Users that experience this may have power cycled the M-series switch while it was participating in a fabric with Frame Redirection zoning, a capability used for FOS-based application or encryption services . If the switch is still participating in the fabric with Frame Redirection, issue the "cfgsave" command from a Brocade FOS-based switch with the Frame Redirection zone in its defined zone database. If the M-EOS switch is no longer attached to the fabric with Frame Redirection zoning, issue the "Config.Zoning.deleteSplZoneSet" command via CLI to the M-EOS switch.

FCAP

- If VF is enabled on a switch, HTTPS and FCAP certificates should always be imported in the Default Switch. Certificates imported in a non-Default Switch will not be available after hafailover operation.
- The pkicert (1.06) utility may cause evm errors, so each new switch should be isolated from the fabric and placed in non-vf mode to install new certificates.

FICON

- Refer to *Appendix: Additional Considerations for FICON Environments* for details and notes for deployment in FICON environments.

FL_Port (Loop) Support

- The FC8-48 and FC8-64 blade support attachment of loop devices in the DCX and DCX-4S.
- Virtual Fabrics must be enabled on the chassis and loop devices may only be attached to ports on a 48-port or 64-port blade assigned to a non-Default Logical Switch operating with the default 10-bit addressing mode (they may not be in the default Logical Switch).
- A maximum of 144 ports may be used for connectivity to loop devices in a single Logical Switch within a chassis in 10-bit dynamic area mode on DCX-4S.
- A maximum of 112 ports may be used for connectivity to loop devices in a single Logical Switch within a chassis in 10-bit dynamic area mode on DCX.
- Loop devices continue to be supported when attached to ports on the FC8-16, FC8-32, FC4-16 and FC4-32 blades with no new restrictions.

Port Mirroring

- On the Brocade 5300, the port mirroring feature has a limitation where all port mirror resources must stay within the same ASIC port group. The resources are the configure mirror port, Source Device, and Destination Device or ISL, if the Destination Device is located on another switch. The

ASIC port groups are 0-15, 16-31, 32-47, 48-63, and 64-79. The routes will be broken if the port mirror resources are spread across multiple port groups.

- Port Mirroring is not supported on the Brocade 7800.

10G Interoperability

- 10G interop between FC10-6 and McDATA blades is not supported due to a HW limitation, however the FC10-6 is supported in a chassis running in Interopmode 2 or 3 (FC10-6 to FC10-6 connections only). An FC10-6 blade will not synchronize with a McDATA 10G blade. However, the inability to synchronize will not negatively impact the system.

Port Fencing

- The state changes counter used by Fabric Watch in FOS v6.3 has been updated to ignore any toggling of F-ports due to planned internal mechanisms such as throttling and trunking. There are some FOS CLI commands such as portcfgspeed, portCfgTrunkPort etc that implicitly disable/enable ports after configuration.
- The Port Fencing feature is not supported for Loss of Sync (LOS) and Link Failure (LF) areas of Port/F-port/E-port classes. State change area can be used in place of LOS/LF areas for Port Fencing.

Zoning

- If the default zoning mode is set to All Access and more than 120 devices are connected to the fabric, you cannot enable All Access.
- Beginning with the FOS v6.2.0 release, all WWNs containing upper-case characters are automatically converted to lower-case when associated with a zone alias and stored as part of a saved configuration on a switch. For example, a WWN entered as either "AA.BB.CC.DD.EE.FF.GG.HH" or "aa.bb.cc.dd.ee.ff.gg.hh" when associated with a zone alias will be stored as "aa.bb.cc.dd.ee.ff.gg.hh" on a switch operating with FOS v6.2.0 or later.

  This behavioral change in saved zone alias WWN members will not impact most environments. However, in a scenario where a switch with a zone alias WWN member with upper case characters (saved on the switch with pre-FOS v6.2.0 code) is merged with a switch with the same alias member WWN in lower case characters, the merge will fail, since the switches do not recognize these zoning configurations as being the same.

  For additional details and workaround solutions, please refer to the latest FOS Admin Guide updates or contact Brocade Customer Support.

ICLs

- If a DCX with an 8-link ICL license is connected to a DCX with a 16-link license, the DCX with the 16-link license will report enc_out errors. The errors are harmless, but will continue to increment. These errors will not be reported if a DCX with a 16-link license is connected to a DCX-4S with only 8-link ICL ports.
- If ICL ports are disabled on only one side of an ICL link, the enabled side may see enc_out errors.

AP 7420 Interoperability (refer to Defect 307117)

- A switch running FOS v6.4 cannot connect to an E_Port on an AP7420.
- An AP7420 can form a direct ISL connection with a switch running FOS v6.3 or lower version of FOS firmware. A switch running FOS v6.4 can still participate in a fabric with an AP7420 as long as the AP7420 is not directly connected to the FOS v6.4 switch.

- A switch running FOS v6.4 in InteropMode 0 (Brocade Native Mode) cannot connect to an EX_Port on an AP7420. A switch running FOS v6.4 in InteropMode 2 or InteropMode 3 can be connected to EX ports on an AP7420.

Extended Fabrics and R_RDY Flow Control

Beginning with Fabric OS v5.1, Brocade supported the Extended Fabrics feature in conjunction with R_RDY flow control (R_RDY flow control mode can be enabled via portCfgISLMode command). R_RDY flow control mode that uses IDLE primitives does not support Brocade frame-based Trunking for devices such as Time Division Multiplexor (TDM.) In order to overcome this limitation and provide support for frame-based Trunking with Extended Fabrics, Fabric OS v6.2.0 and later has been enhanced to support interoperability with these distance extension devices.

Fabric OS v6.3.1 allows Extended Fabrics E_Ports to operate in VC_RDY mode using either ARB or IDLE primitives as fill words. This allows frame-based Trunking to be supported on Extended Fabrics E-ports even when IDLE primitives are configured for these ports when operating in native VC_RDY mode. Prior to this change, frame-based Trunking was supported only when ARB primitives were used in VC_RDY mode. With Fabric OS v6.2 or later, frame-based Trunking is supported on Extended Fabrics E_Ports regardless of whether IDLE or ARB primitives are used when operating in native VC_RDY mode.

Implementation

The portcfglongdistance CLI parameter "VC Translation Link Init" is now overloaded to specify if the long distance link should use IDLE or ARB primitives. By default, vc_init is enabled. If vc_init is enabled, the long distance link will use ARB primitives. If vc_init is disabled, the link will use IDLE primitives.

Note:

Buffer to Buffer Credit Recovery feature is not supported on Extended Fabrics E_Port when it is configured to use IDLE primitives. The user must disable buffer to buffer credit recovery feature using the command portcfgcreditrecovery and specifying the disable option; otherwise, the link will continuously reset.

The Adaptive Networking SID/DID Traffic Prioritization QoS feature is not supported on Extended Fabrics E_Ports when IDLE primitives are configured on these ports. This is because in this mode only data Virtual Channels are available while QoS related virtual channels are not available.

When connecting to an extension device that does not support ARB primitives (such as some TDM products), the following configuration must be used:

portcfgqos -disable <port>
portcfgcreditrecovery –disable <port>
portCfgLongDistance <port> <LD|LD> 0 <distance>

The fabric parameter "fabric.ops.mode.longdistance" is now deprecated and should not be used.

Miscellaneous.

- When ports on a 5470 embedded switch are configured for 8G, Emulex HBAs may not login in time and cause boot over SAN failures. Setting the port to auto-negotiate allows these HBAs to log in correctly at 8G.
- POST diagnostics for the Brocade 5100 have been modified beginning with FOS v6.3.1b and v6.4.0 to eliminate an "INIT NOT DONE" error at the end of an ASIC diagnostic port loopback test. This modification addresses BL-1020 Initialization errors encountered during the POST portloopbacktest. (Defect 263200)
- It is recommended that no more the 50 F_Port Top Talkers be enabled on a 48000 director in a large fabric (>4000 devices).

- It is recommended that for directors with more than 300 E_Ports, the switch be disabled prior to executing the "switchCfgTrunk" command (used to disable or enable trunking on the switch).
- During non-disruptive firmware upgrades, E_Ports in R-RDY mode may cause some frame drops on the E-port links.
- The ***portCfgFillWord*** command, applicable to 8G-capable ports, has been enhanced with FOS v6.3.1 and v6.4 to provide two new configuration options (Modes 2 and 3). The available settings include:

  Mode - Link Init/Fill Word

  Mode 0 – IDLE/IDLE

  Mode 1 – ARBF/ARBF

  Mode 2 – IDLE/ARBF

  Mode 3 – If ARBF/ARBF fails use IDLE/ARBF

  Although this setting only affects devices logged in at 8G, changing the mode is disruptive regardless of the speed the port is operating at. The setting is retained and applied any time an 8G device logs in. Upgrades to FOS v6.3.1 or v6.4 from prior releases supporting only modes 0 and 1 will not change the existing setting, but switches or ports reset to factory defaults with FOS v6.3.1 or v6.4 will be configured to Mode 0 by default. The default setting on new units may vary by vendor. Please use portcfgshow CLI to view the current portcfgfillword status for that port.

  Modes 2 and 3 are compliant with FC-FS-3 specifications (standards specify the IDLE/ARBF behavior of Mode 2 which is used by Mode 3 if ARBF/ARBF fails after 3 attempts). For most environments, Brocade recommends using Mode 3, as it provides more flexibility and compatibility with a wide range of devices. In the event that the default setting or Mode 3 does not work with a particular device, contact your switch vendor for further assistance.

- For the configure command, in FOS v6.4, the default value that displays for Maximum Logins per switch is different than the value that displays in FOS v6.3.x. The default value has not changed; it was displayed incorrectly in FOS v6.3.x, and is now corrected.

Defects

Closed with Code Change in Fabric OS v6.4.1

This section lists the defects with Critical, High and Medium Technical Severity closed with a code change as of October 7, 2010 in Fabric OS v6.4.1.

Defect ID: DEFECT000319291	**Technical Severity**: Critical
Summary: In a dual Inter-fabric Link (IFL) FCR fabric with LSAN Matrix configured and LSAN binding enabled, disabling the EX_Port for one of the IFLs causes all FCR devices to be removed from the name server database.	
Symptom: In an FCR fabric with LSAN Matrix configured, if there are two IFLs from a FCR to one edge fabric and LSAN binding is enabled, then when one of the EX_Ports is disabled, all imported devices corresponding to this edge fabric are dropped from name server.	
Feature: 8G FCR	**Function**: FCR Daemon
Probability: Low	
Found in Release: FOS6.4.0	**Service Request ID**: 451063

Defect ID: DEFECT000319434	**Technical Severity**: Critical
Summary: Originator source ID sent by FCR in the header and in the body of the TAPE REC command frame do not match. This causes the command to fail.	
Symptom: The Tape REC command fails in an FCR environment, causing corrupted data on the tape.	
Feature: 8G FCR	**Function**: FCR Daemon
Probability: High	
Found in Release: FOS6.4.0	**Service Request ID**: 450651

Defect ID: DEFECT000319598	**Technical Severity**: Critical
Summary: Functional fans are flagged as bad with error code "[PLAT-5042], FAN I2C reset" messages in the Raslog.	
Symptom: One or more fans go into a faulted state on the DCX chassis even though the fans are operating properly.	
Workaround: Reseat the fan reported as faulty.	
Feature: System Controls/EM	**Function**: Infrastructure
Probability: Medium	
Found in Release: FOS6.4.0	**Service Request ID**: 451479

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000269222	**Technical Severity**: High
Summary: 8G switches, and directors with an 8G blade in slot 1, see frame drops in the fabric when there are Ex/VEx ports configured	
Symptom: If there is an Ex/VEx port configured in the same ASIC chip as a F/E port with EGID 0, hosts cannot see the targets and customer may observe poor performance in the fabric .	
Workaround: User can identify a fabric has this problem by running "sloterrshow 1"on directors or sloterrshow on switch, and "type6_miss" counter should be seen continuously incrementing during traffic load on backend port/E_Port. Avoid configuring an EX_Port or a VEx_Port near an F/E port with an EGID of 0. To identify a port with an EGID of 0, login in as root and run "bladeportmap [1]". The first port where "Upt" is not -1 uses EGID 0. Once the problem occurs, the user must make the F/E port into an EX_Port and then configure it back to an F/E port to fix the problem port. Execute the following instructions. 1) Disable the F/E port 2) Configure the F/E port as an EX_Port for a valid FID 3) Connect a link between the FID and the EX port (IFL) 4) Enable the port 5) Verify that the link is online. Then disable the port 6) Disable the EX_Port configuration 7) Connect the host/ISL back to the F/E port 8) Enable the port	
Feature: Field Escalation	**Function**: ASIC Driver
Probability: Low	
Found in Release: FOS6.2.0	**Service Request ID**: 401939
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000278024	**Technical Severity**: High
Summary: If a PLOGI is received right before hafailover / hot code load on a Brocade 48000 with FC4-48 blades installed, and the PLOGI has zone misses for devices communicating through the primary shared area port, it faults the CP and generates EM-1051 messages.	
Symptom: After upgrading a Brocade 48000 with FC4-48 blades installed, the FC4-48 blade faults and traffic through the blade is disrupted. External RASLOG messages EM-1051 are seen reporting a slot inconsistency detected.	
Feature: 4G ASIC Driver	**Function**: ASIC Driver
Probability: Low	
Found in Release: FOS6.3.0	**Service Request ID**: SR415643

Defect ID: DEFECT000282352	**Technical Severity**: High
Summary: Login database gets corrupted after several switch enable/disable transitions. This happens when misbehaving devices bouncing offline/online don't participate in LIP to acquire a valid AL_PA and then later try to login with an invalid AL_PA	
Symptom: Kernel panic occurs after several switch disable/enable transitions.	
Feature: FC Services	**Function**: Fabric
Probability: Low	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000284426	**Technical Severity**: High
Summary: Due to firmware being out of synch with the FPGA version, a Brocade 5470 may get extremely high enc out errors on ports connected to 3rd party HBAs, which may cause link related problems to that HBA.	
Symptom: High "enc out" errors show up in the counters when running the porterrshow CLI command. These errors may also cause link related errors on the link connected to the HBA as well as errors reported in the HBA logs.	
Feature: Embedded Platform Services	**Function**: BR 5470 Integration
Probability: High	
Found in Release: FOS6.4.0	
Where Else Fixed: FOS6.3.2, FOS6.3.1 b	

Defect ID: DEFECT000285644	**Technical Severity**: High
Summary: Brocade 200E, 40XX, 4424, 4X00, 5000, 7500 or 7600 switch, or the standby CP in a 48000 director remains in a perpetual reboot state after upgrading from FOS v6.1.x to FOS v6.2.x due to inconsistency between SSL certificate and http.enabled setting	
Symptom: After upgrading from FOS v5.3.1x to FOS v6.2.x, switch or standby CP on Brocade 48000 ends up in a panic loop.	
Workaround: Manually ensure that http.enabled matches with SSL certificate by "configshow http.enabled' as admin user. If it's inconsistent with SSL Certificate requirement, please execute /fabos/libexec/webdconfigure as root to set "HTTP Enable" to yes. Or schedule a window, disable switch and configdownload a file with "http.ebale:1 [end]" when switch is at FOSv5.3.x or v6.1.x to correct the configuration. If the switch is already stuck in a reboot loop, login as root via serial console, copy & paste the following command string into console as one line before the next reboot: sed 's/http.enabled:0/http.enabled:1/g' < /etc/fabos/fabos.0.conf > tmp;cp tmp /etc/fabos/fabos.0.conf;cp tmp /mnt/etc/fabos/fabos.0.conf;rm tmp	
Feature: Field Escalation	**Function**: Web Management
Probability: Low	
Found in Release: FOS6.2.0	**Service Request ID**: 420655
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000286396	**Technical Severity**: High
Summary: On Brocade 7600 or FA4-18 blade, when running SAS application, received RSCNs result in a Name Server memory leak and switch panic	
Symptom: In SAS environment with Brocade 7600 or FA4-18 blade, switch panics causing errors in storage appliance.	
Feature: FA4-18 Platform Services	**Function**: Blade FOS SW
Probability: Low	
Found in Release: FOS6.1.0	**Service Request ID**: 423487
Where Else Fixed: FOS6.3.2	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000288870	**Technical Severity**: High
Summary: Converged Network Adapter (CNA) cannot login during shut/no shut operation	
Symptom: CNA is not able to log in to Brocade 8000 / FCOE10-24 blade.	
Feature: CEE-FCOE	**Function**: FCOE DRIVER
Probability: Low	
Found in Release: FOS6.3.1_cee	
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000289212	**Technical Severity**: High
Summary: During long-running stress test that involves repeated ISL and I/O synch link disabling, rekey for a LUN appeared stuck	
Symptom: Rekey gets stuck	
Feature: Data Security	**Function**: Re-key
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000289315	**Technical Severity**: High
Summary: Storage ports can get stuck as an N_Port with status "Disabled (Fabric Login Failed)" in AG mode with Auto Policy enabled	
Symptom: Some devices are unable to login because the port on AG is locked as N_Port. There is no CLI to "unlock" the port configuration, so the devices are never able to login.	
Workaround: Re-boot AG switch	
Feature: Access Gateway Services	**Function**: Platform Other
Probability: Medium	
Found in Release: FOS6.2.2	

Defect ID: DEFECT000289847	**Technical Severity**: High
Summary: FC4-16IP "iscsicfg --commit all" hangs switch telnet session.	
Symptom: When trying to commit any iSCSI configuration, the operation will not finish, telnet session will hang. A hafailover is needed to recover from this. This only applies to FC4-16IP blades.	
Feature: Field Escalation	**Function**: ISCSI
Probability: High	
Found in Release: FOS6.3.0	**Service Request ID**: 420861
Where Else Fixed: FOS6.3.2	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000296266	**Technical Severity**: High
Summary: When Auto Port Configuration is enabled on an Access Gateway, switch will lock the port as an N_Port if no FLOGI received within timeout period, then disable it after receiving ELS rejects	
Symptom: On a Brocade 5480 with the Auto Port Configuration (APC) feature enabled, ports will become locked down as N_Ports if there is no FLOGI sent by an attached device within the timeout period. This can happen if using Boot over SAN during the period when the	
Workaround: Use default AG -PG policy	
Feature: Access Gateway Services	**Function**: Embedded Platforms
Probability: Medium	
Found in Release: FOS6.3.0	**Service Request ID**: 420895

Defect ID: DEFECT000300183	**Technical Severity**: High
Summary: RPCD panic and subsequent switch cold recovery occurs due to internal memory synchronization and corruption issues when changing security settings	
Symptom: Cold recovery of the CP can happen when a user changes their security configuration (certificates or rpc secret) through webtools while there is an active RPC connection from SMI-A.	
Workaround: Customers that experience this problem can stop using their SMI based application until the code upgrade complete.	
Feature: Field Escalation	**Function**: Panic / OOM
Probability: Medium	
Found in Release: FOS6.3.0	**Service Request ID**: 432349
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000300195	**Technical Severity**: High
Summary: When two asynchronous entities (SMI-A and DCFM) are managing the switch at the same time it exposes a race condition, causing switch panic	
Symptom: Switch panics when being managed by both DCFM and SMI-A management applications.	
Feature: Field Escalation	**Function**: Management Services
Probability: Low	
Found in Release: FOS6.3.0	**Service Request ID**: 428387

Defect ID: DEFECT000300326	**Technical Severity**: High
Summary: Weblinker causes active CP to reboot (initiate a cold recovery) when the standby CP is not responsive (stuck in a reboot loop).	
Symptom: Weblinker on active CP panics, leading to a cold recovery.	
Feature: Field Escalation	**Function**: Management Services
Probability: Low	
Found in Release: FOS6.2.0	**Service Request ID**: 432083

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000301260	**Technical Severity**: High
Summary: Host/Target unable to establish routes across VEX-VE Link	
Symptom: Due to timing issue, hosts will not be able to access targets for any operational purposes when the NUMBER of FCIP Circuit configuration on one side of the FCIP Tunnel does not match the other side.	
Feature: FCIP	**Function**: FCIP I/O
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301590	**Technical Severity**: High
Summary: Duplicate proxy ID condition on an E_Port ISL after a firmware download causes invalid translation in FCIP FCR and dropped FCP responses to Initiator	
Symptom: Host and Target unable to establish connectivity across VEX link on Brocade 7800 and FX8-24 after a firmware download.	
Workaround: Disable/enable (toggle) switch target ports.	
Feature: Embedded Platform Services	**Function**: FOS Kernel Driver
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301952	**Technical Severity**: High
Summary: When multiple PLOGIns to well known addresses are received very fast back to back before routes are established there is no ACCept sent back by management server.	
Symptom: Host gets a link level ACK for it's initial PLOGI in to the switch management server, but does not receive the ACCept from the management server, causing the host to time out it's login and issue an ABTS after it is brought on line. Typically seen with ho	
Feature: Field Escalation	**Function**: FICON
Probability: Low	
Found in Release: FOS6.3.1	**Service Request ID**: 435255
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000304839	**Technical Severity**: High
Summary: F_Port comes online as a G_Port on Brocade 200E and 4G embedded platforms, causing the host not to log in.	
Symptom: During a host reboot, the host may not come up when connected to Brocade 200E and 4G embedded platforms.	
Feature: Field Escalation	**Function**: ASIC Driver
Probability: Medium	
Found in Release: FOS6.2.2	**Service Request ID**: 436525

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000304922	**Technical Severity**: High
Summary: Compact flash failure handling needs enhanced to detect and proactively trigger an hafailover when a bad flash part is detected.	
Symptom: Compact flash can sometimes fail silently, so customer only sees critical daemon failures, which then trigger a failover. Occasionally no failure is seen at all when this happens, the switch will continue running but does not produce any logs.	
Feature: Field Escalation	**Function**: OS: Infrastructure
Probability: Low	
Found in Release: FOS6.2.1	**Service Request ID**: 434659

Defect ID: DEFECT000312516	**Technical Severity**: High
Summary: Weblinker processes terminate (core dump) and then restart when management app (DCFM, etc.) queries Top Talker information using CAL requests over HTTP.	
Symptom: Weblinker processes terminate and then restart when querying Top Talker information from the switch.	
Feature: Field Escalation	**Function**: ASIC Driver
Probability: Low	
Found in Release: FOS6.3.1	**Service Request ID**: 445261

Defect ID: DEFECT000313195	**Technical Severity**: High
Summary: Due to a residual setting left over in the firmware, if Top Talkers is enabled / disabled, and devices PLOGI in to unknown type ports, class 3 frame rejects are continuously forwarded to the CPU causing slow performance.	
Symptom: Host ports can experience slow performance after enabling and then disabling Top Talker. This is accompanied by class 3 frame rejects showing in the portlogdump.	
Feature: 8G ASIC Driver	**Function**: C2 ASIC driver
Probability: Low	
Found in Release: FOS6.3.1	

Defect ID: DEFECT000262707	**Technical Severity**: Medium
Summary: Core file size not checked when being generated by several system processes, causing the core files to exceed size of the Compact Flash (CF) and corrupt FOS system files.	
Symptom: Switch will not reboot due to corrupted FOS system files.	
Feature: Field Escalation	**Function**: OS: Linux
Probability: Low	
Found in Release: FOS6.1.0	
Where Else Fixed: FOS6.3.2	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000274403	**Technical Severity**: Medium
Summary: One directional route problem in fabric prevents local switch communicating to remote switch, causing remote switch to disable local switch without any notification.	
Symptom: Switch goes to disabled state without any reason logged, and with no user action. Customer sees messages indicating RTWR has reached max retries in RASLOG.	
Feature: Field Escalation	**Function**: RAS Logging / Tracing
Probability: Low	
Found in Release: FOS6.2.0	**Service Request ID**: 411755

Defect ID: DEFECT000282759	**Technical Severity**: Medium
Summary: Switches in AG mode are not handling multi-sequence frames properly. This causes memory corruption and switch panic.	
Symptom: One or more switches in AG mode in the same fabric have an agdd panic occur. RASLOG error messages like: "[KSWD-1002], 1285, FFDC | CHASSIS, WARNING, Brocade300, Detected termination of process agd0:1793" are seen and then debug information is dumped.	
Feature: Field Escalation	**Function**: Access Gateway
Probability: Low	
Found in Release: FOS6.3.0	**Service Request ID**: 419851

Defect ID: DEFECT000286898	**Technical Severity**: Medium
Summary: Switch panics after information unit (iu) allocation failure.	
Symptom: When a frame comes in to the embedded port and there is no memory to hold it temporarily, the switch panics. This is likely to happen when there are spurious interrupts from a device. It impacts 4G switches only.	
Feature: Field Escalation	**Function**: ASIC Driver
Probability: Low	
Found in Release: FOS6.1.0	**Service Request ID**: 423799
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000287990	**Technical Severity**: Medium
Summary: Value of 0xffffffff in the config file for the N_Port topology field causes an error and fails the configdownload operation.	
Symptom: Using the configdownload command on a BES in AG mode with SRDF enabled fails with the following error: strtoul failed str 0xffffffff, errno =2 aglib_strtobm failed for ag.pg.pgporttopo.0 value = 0xffffffff configDownload: agImport() failed key = ag.pg.pgp	
Feature: Access Gateway Services	**Function**: Other
Probability: Medium	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000288832	**Technical Severity**: Medium
Summary: On Brocade 5460 platform, firmware version was being set to the FOS default value string, not the proper version string	
Symptom: Firmware version string always shows FOS default on Brocade 5460, not the correct version through 3rd party SVP.	
Feature: Embedded Platform Services	**Function**: Sys-Control/Environment Monitor
Probability: Low	
Found in Release: FOS6.3.1	
Where Else Fixed: FOS6.3.2, FOS6.3.1 b	

Defect ID: DEFECT000290173	**Technical Severity**: Medium
Summary: The fmconfig filter monitors stop counting frames after a firmware downgrade and then upgrade operation is done	
Symptom: The fmconfig command does not display counters for frame monitors after a firmware downgrade and then upgrade operation is done.	
Feature: Performance Monitor	**Function**: Filter monitor
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000290918	**Technical Severity**: Medium
Summary: Due to changes made to support virtual fabrics, the formatting of errdump messages causes some log messages to be lost after upgrading to FOS 6.2.0+	
Symptom: Firmware upgrade related messages from the previously installed version of FOS vanish from the logs after upgrading FOS v6.2.x or later.	
Feature: Field Escalation	**Function**: OS: Infrastructure
Probability: High	
Found in Release: FOS6.2.2	**Service Request ID**: 422701

Defect ID: DEFECT000297954	**Technical Severity**: Medium
Summary: Due to heartbeat counter communication problems between the Control Processor (CP) and FR4-18i blade, the CP and blade can lose sync, causing the blade to be rebooted.	
Symptom: FCIP-5030 messages are seen in the internal RASLOG, indicating that the FR4-18i blade has lost heartbeat with the Control Processor (CP). Switch is rebooted with a "HAM-1004 reboot unknown" error message showing in the RASLOG.	
Feature: Field Escalation	**Function**: FCIP
Probability: Low	
Found in Release: FOS6.3.0	**Service Request ID**: 429431
Where Else Fixed: FOS6.3.2	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000298571	**Technical Severity**: Medium
Summary: "(DLS)" label needs to be removed from the "Dynamic Load Sharing" and "Lossless" group boxes that show up in the Webtools Switch Administration Routing Tab	
Symptom: Confusion due to ambiguous text in Webtools for "Dynamic Load Sharing" and "Lossless" in the Routing Tab group box under Switch Administration.	
Feature: WebMgmt	**Function**: Switch Admin
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000298920	**Technical Severity**: Medium
Summary: QoS priority traffic distribution over an FCIP tunnel may be incorrect with large amounts of outstanding I/O, due to resource depletion at high IO rates.	
Symptom: QoS circuits running over a 1G/10G bandwidth circuit will have incorrect QoS distributions with large I/O, resulting in QoS priority traffic distribution not being enforced properly over an FCIP Tunnel. Customer using QoS zoning may see performance issues	
Feature: FCIP	**Function**: FCIP I/O
Probability: Medium	
Found in Release: FOS6.3.1	
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000298963	**Technical Severity**: Medium
Summary: Weblinker keeps unused file descriptors caused FFDCs and RAS-1004 Software 'Verify' errors every 3 minutes on a VF, filling up the RASLOG.	
Symptom: On a switch being managed by DCFM or Webtools, with VF enabled and Radius server configured, customer may see RAS-1004 Software 'Verify' errors every 3 minutes on each VF, filling up the RASLOG and causing en eventual FFDC event in other system modules du	
Feature: Field Escalation	**Function**: OS: Infrastructure
Probability: Medium	
Found in Release: FOS6.3.1	**Service Request ID**: 430447

Defect ID: DEFECT000299528	**Technical Severity**: Medium
Summary: When running tape operations using tape pipelining in a Brocade 7800 or FX8-24 blade, the FCP_CONF command may be dropped, causing the tape operation to fail.	
Symptom: I Series I/O stops with tape pipelining enabled, causing tape operations running over a Brocade 7800 or FX8-24 blade to not complete successfully.	
Feature: FCIP	**Function**: Emulation
Probability: Low	
Found in Release: FOS6.3.1	
Where Else Fixed: FOS6.3.2	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000300954	**Technical Severity**: Medium
Summary: ceeturboramtest not running as part of systemverification in FCOE10-24 and Brocade 8000.	
Symptom: RAM errors are not detected by systemverification diagnostic.	
Feature: Diagnostics	**Function**: Post Diags
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301650	**Technical Severity**: Medium
Summary: Spinfab fails on an Eport residing in a Base switch.	
Symptom: Frame drops and undefined behavior can be expected while running spinfab.	
Feature: Diagnostics	**Function**: Other
Probability: High	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301959	**Technical Severity**: Medium
Summary: In a Brocade 48000 with an FC4- 48 blade, after port enable/disable of primary port, NPIV PIDs disappear from cam table entries, disrupting data.	
Symptom: In a Brocade 48000 with an FC4- 48 blade, booting a host connected to a primary port causes NPIV data on secondary port IO to abort.	
Feature: Field Escalation	**Function**: ASIC Driver
Probability: High	
Found in Release: FOS6.3.0	**Service Request ID**: 422909

Defect ID: DEFECT000302032	**Technical Severity**: Medium
Summary: Port is reinitialized multiple times during unstable signal/port fault period when connected to certain servers that do not cut light when rebooting.	
Symptom: With certain very specific servers that do not cut off light during reboot, the switch cannot bring an F_Port on line for a long time.	
Feature: Field Escalation	**Function**: ASIC Driver
Probability: Low	
Found in Release: FOS6.3.1	

Defect ID: DEFECT000302170	**Technical Severity**: Medium
Summary: Long TPERF runs result in inaccurate stats as well as FCIP tunnel bounces. The 7800 needs to be rebooted to recover.	
Symptom: TPERF reflected incorrect loss and out of order statistics. The FCIP Tunnel will eventually go down during TPERF runs, even on a clean network. The 7800/FX8-24 needs to be rebooted to recover.	
Feature: FCIP	**Function**: FCIP CLI
Probability: Medium	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000302245	**Technical Severity**: Medium
Summary: List of network security vulnerabilities needs to be addressed with BES and FS8-18 platform.	
Symptom: The following vulnerabilities are reported by network vulnerability scan against a fabric with the BES and FS8-18 platform: 393 NFS Enabled, 572 RPC mountd, 675 RLogin Service, 678 RPC portmap, 817 RPC nlockmgr, 971 rshd Detected, 3913 OpenSSH, GSSAPIDele	
Feature: Field Escalation	**Function**: Encryption
Probability: High	
Found in Release: FOS6.3.1	**Service Request ID**: 434745

Defect ID: DEFECT000303023	**Technical Severity**: Medium
Summary: Newly active CP fails to complete recovery from either FWDL (FOS v6.2.x to FOS v6.3.x), or from hafailover, due to persistent disabled GE port on FR4-18i blade	
Symptom: During either a firmware download (FOS v6.2.0e to FOS v6.3.0d), or hafailover, Active CP fails to come online completely, requiring a reboot of both CPs to regain hasync.	
Feature: Field Escalation	**Function**: FC Layer 2 Routing
Probability: High	
Found in Release: FOS6.2.0	**Service Request ID**: 433211

Defect ID: DEFECT000304033	**Technical Severity**: Medium
Summary: On a Brocade 5470, setting the port to fixed 8GB causes boot over SAN to fail with some 3rd party HBAs.	
Symptom: Boot over SAN with 3rd party 8G HBA fails with port speed configured fixed to 8GB.	
Feature: 8G ASIC Driver	**Function**: PORT
Probability: Medium	
Found in Release: FOS6.3.1	

Defect ID: DEFECT000308204	**Technical Severity**: Medium
Summary: After a panic occurs in a Brocade FR4-18i or 7500, the CP attempts to output error message FCIP-5051 using an uninitialized section of shared memory in the FR4-18i or 7500, causing an "Oops: kernel access of bad area" panic on the CP.	
Symptom: A Brocade FR4-18i or 7500 panic occurs followed by a CP panic, with an "Oops: kernel access of bad area" message seen in the RASLOG.	
Feature: FCIP	**Function**: FCIP CP
Probability: Low	
Found in Release: FOS6.3.2	

Defect ID: DEFECT000308833	**Technical Severity**: Medium
Summary: IPv4 and IPv6 shows different Webtools behavior in Fabric Tree. Webtools should not be able to be launched from Fabric Tree when using IPv6	
Symptom: Webtools can be launched from Fabric Tree when using auto configured IPv6 address when it shouldn't be.	
Feature: WebMgmt	**Function**: IPV6
Probability: High	
Found in Release: FOS6.1.2	**Service Request ID**: 443373

Close with Code Change in Fabric OS v6.4.1

Defect ID: DEFECT000311055	**Technical Severity**: Medium
Summary: The "do not time out if tape pipelining emulation" code needs ported from the 7500 to the 7800.	
Symptom: After a tape drive has been idle for a few hours and then traffic is restarted, the tape performance is degraded	
Feature: FCIP	**Function**: Emulation
Probability: Medium	
Found in Release: FOS6.3.2	**Service Request ID**: 444721

Defect ID: DEFECT000313466	**Technical Severity**: Medium
Summary: SCSI command frames are dropped through IFL links in FCR Fabric.	
Symptom: If a Brocade switch performs an HA Failover at the same time as an device is continuously issuing a PLOGI to an unknown port, switch may drop SCSI command frames across IFL connections after hafailover. SCSI data frames pass through. This does not happen	
Workaround: To avoid the problem configuring EX_Port and device doing PLOGI to unknown device in the same ASIC chip or remove such device from fabric.	
Feature: 8G ASIC Driver	**Function**: C2 ASIC driver
Probability: Low	
Found in Release: FOS6.3.1	**Service Request ID**: 425953

Defect ID: DEFECT000313557	**Technical Severity**: Medium
Summary: Blade handler monitor is not handling AP blades status properly, causing invalid status to be reported in switchstatusshow	
Symptom: The output of the switchstatusshow command does not show "marginal" switch status when an AP blade goes down.	
Feature: 4G Platform Services	**Function**: FOS Kernel Drivers
Probability: Low	
Found in Release: FOS6.3.1	

Defect ID: DEFECT000315227	**Technical Severity**: Medium
Summary: FCIP Tunnel bounces when running a large number of small FCIP frames through a WAN optimizer.	
Symptom: FCIP tunnel will periodically go down and then recover when a large number of small FCIP frames are run through a network with WAN Optimizers present and the FCIP Tunnel is in byte streaming mode.	
Feature: Legacy FCIP (7500/FR4-18i)	**Function**: FCP TCP/IP Stack
Probability: Low	
Found in Release: FOS6.4.0	

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Closed with Code Change in Fabric OS v6.4.0c - GA September 2, 2010

This section lists the defects with Critical, High and Medium Technical Severity closed with a code change as of September 2, 2010 in Fabric OS v6.4.0c.

Defect ID: DEFECT000301286	**Technical Severity:** High
Summary: Routes are not properly redistributed after trunk group loses a trunk member.	
Symptom: In a setup with 8G switches running exchanged base route policy, the routes are not rebalanced properly after a trunk group loses a member. This may cause performance to be sluggish on 8G switches fabric if there happens to be a slow drain device using the lower bandwidth links to further congest the fabric. This only impacts 8G switches.	
Workaround: Keep trunk groups with equal bandwidth.	
Feature: Field Escalation	**Function:** FC Layer 2 Routing
Probability: Medium	
Found in Release: FOS6.2.1	**Service Request ID:** 433171
Where Else Fixed: FOS6.3.2	

Defect ID: DEFECT000310231	**Technical Severity:** High
Summary: Constant link resets occur when a long distance port is configured.	
Symptom: After configuring a long distance E_Port that requires 128 to 511 credits the customer observes continuously link timeout with no traffic running. Constant stream of C2-5021. This, only, affects 8G platforms.	
Workaround: Use QOS mode	
Feature: Field Escalation	**Function:** ASIC Driver
Probability: Medium	
Found in Release: FOS6.3.1	**Service Request ID:** 443673

Defect ID: DEFECT000315258	**Technical Severity:** High
Summary: Switch panics, blade faults, or switch is disabled when credit loss is detected on backend link.	
Symptom: When credit loss happens on internal backend port, RASLOG C-5021 or C2-5021 is reported with "S#,P-1(#)". If this happens on: • FR4-18i: Blade is faulted. • Brocade 4900,5300 and7500: Switch is faulted/disabled. • All other switches/directors: hareboot/hafailover will eventually happen. An example of C2-5021 internal port raslog as: [C2-5021], 730078/0, SLOT 6 | CHASSIS, WARNING, , S8,P-1(61): Link Timeout,....	
Feature: 8G Platform Services	**Function:** FOS Kernel Drivers
Probability: Low	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.0c

Defect ID: DEFECT000315751	**Technical Severity:** High
Summary: FCIP tunnel bounces on workload start	
Symptom: Traffic disruption is observed.	
Workaround: Enable some sort of FICON emulation (XRC or Tape Read/Write Pipelining).	
Feature: FCIP	**Function:** FCIP Port
Probability: High	
Found in Release: FOS6.4.0	**Service Request ID:**

Defect ID: DEFECT000315752	**Technical Severity:** High
Summary: HA failover caused the newly active CP to disable switch or may cause switch panic.	
Symptom: When Lossless is enabled, HA failover caused the newly active CP to disable switch or may cause switch panic. When the switch is disabled, the ports remain disabled. The user has to enable the switch explicitly.	
Feature: 8G Platform Services	**Function:** Routing
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000297957	**Technical Severity:** Medium
Summary: The command haenable is not auto rebooting the standby CP when the standby CP is removed and reseated/replaced	
Symptom: The active and backup CP end up out of synch when the standby CP is reseated or replaced as part of the documented field CP replacement procedure.	
Workaround: Reboot the standby CP manually.	
Feature: Infrastructure	**Function:** HA
Probability: High	
Found in Release: FOS6.4.0	**Service Request ID:** 429501

Defect ID: DEFECT000305689	**Technical Severity:** Medium
Summary: During a tape read, dropping the first and middle data frames results in a connection timeout error , dropping the last frame results in a hung host.	
Symptom: During tape reads, frame drops cause connection timeout errors or hung hosts.	
Feature: FCIP	**Function:** Emulation
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000305799	**Technical Severity:** Medium
Summary: FICON block count mismatch in tape read emulation (FCIP link)	
Symptom: Tape job fails with block count mismatch ABEND	
Workaround: Disable / don't enable FICON emulation	
Feature: FCIP	**Function:** FCIP I/O
Probability: Low	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.0c

Defect ID: DEFECT000307117	**Technical Severity:** Medium
Summary: Unable to form an ISL with AP7420 platform	
Symptom: A switch running FOS6.4.0 cannot form an ISL with AP7420 platform	
Workaround: Connect AP7420 to a platform that is running an earlier release of FOS than FOS6.4.0 (e.g. FOS6.3.0).	
Feature: FC Services	**Function:** Fabric
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000308461	**Technical Severity:** Medium
Summary: Error in thresholding logic for port state change events prevents thresholding condition from being reported properly.	
Symptom: Fabric watch does not detect the condition and generate the correct warning messages for port thresholding events. Customer only sees SNMP-1008 messages indicating "...Last device change happened at HH:MM:SS..." but no thresholding event indicating the count is above the threshold.	
Feature: FABRIC WATCH	**Function:** CLI
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000308734	**Technical Severity:** Medium
Summary: Backup/Restore job fails with FICON tape read extension	
Symptom: Restore job fails with invalid record id	
Workaround: Disable / don't enable FICON emulation for tape jobs	
Feature: FCIP	**Function:** FCIP I/O
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000312245	**Technical Severity:** Medium
Summary: Path not brought online after path deactivation/reactivation in a large heavily loaded FICON tape emulation configuration	
Symptom: Unable to vary paths back online after offline.	
Workaround: When FICON path control blocks are stuck at invalid state, disable the tunnel. If issues are occurring with FICON emulation and ESCON devices, disable FICON Emulation. In the case of the failed tape job, resubmit it.	
Feature: FCIP	**Function:** Emulation
Probability: Medium	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.0c

Defect ID: DEFECT000313149	**Technical Severity:** Medium
Summary: Receiving emulation error 60 during FICON read tape emulation.	
Symptom: Attention status received.	
Workaround: When FICON path control blocks are stuck at invalid state, disable the tunnel. If issues are occurring with FICON emulation and ESCON devices, disable FICON Emulation. In the case of the failed tape job, resubmit it.	
Feature: FCIP	**Function:** Emulation
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000313907	**Technical Severity:** Medium
Summary: Without an FCoE license installed on the switch (8000), configdownload fails	
Symptom: configdownload fails with the following, " ERROR: Unable to apply port configuration. error=No FCoE license present. Commit function of configdownload failed for filter FCOE, lrc = -373. 2010/08/12-19:03:11, [CONF-1023], 1973, FID 128, INFO, V_E218, configDownload failed for chassis."	
Feature: CEE-FCOE	**Function:** Other
Probability: Low	
Found in Release: FOS6.4.1	

Closed with Code Change in Fabric OS v6.4.0b - GA June 25, 2010

This section lists the defects with Critical, High and Medium Technical Severity closed with a code change as of June 25, 2010 in Fabric OS v6.4.0b.

Defect ID: DEFECT000283335	**Technical Severity:** High
Summary: A device with a node WWN of zero connected to an NPIV port queried by CALD causes the switch to panic and reboot	
Symptom: CALD causing switch to panic and reboot about every 20-30mins. It was observed after a recent upgrade to a partner management application.	
Feature: Field Escalation	**Function:** Management Embedded
Probability: Medium	
Found in Release: FOS6.2.1	**Service Request ID:** 421461

Defect ID: DEFECT000299814	**Technical Severity:** High
Summary: IP addresses are allowed to be deleted even if in use by a route	
Symptom: Tunnel configuration anomalies.	
Workaround: Issue portcfgshow iproute to find any invalid route entries and delete them.	
Feature: FCIP	**Function:** Other
Probability: High	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000300728	**Technical Severity:** High
Summary: The LUNs contained in a CTC (Crypto Target Container) lose their paths when a non-encryption switch connecting the host and target is rebooted.	
Symptom: When two BES switches are connected via a single path through a non-encryption switch, the path between the host and the LUNs can be lost when the non-encryption switch is rebooted. This only happens when the HA Cluster (HAC) is set for manual failback, and will also not be observed if there are multiple paths through the fabric so that the loss of one switch does not create a temporary loss of path.	
Feature: Data Security	**Function:** HA Cluster
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301448	**Technical Severity:** High
Summary: Build Fabric sent to Access Gateway with F-Port trunking.	
Symptom: When F-Port trunking is activated and after the master trunk goes offline, the switch will add the new master trunk to the list of ports, which will send EFP/BF/DIA flood. The ports will remain in this state until all N-Ports are taken offline and logged back into the fabric again. Build Fabric (BF) sent to AG and AG forwarding the BF to redundant fabric caused fabric disruption.	
Feature: FC Services	**Function:** Fabric
Probability: Medium	
Found in Release: FOS6.4.0	**Service Request ID:** 432859

Close with Code Change in Fabric OS v6.4.0b

Defect ID: DEFECT000301612	**Technical Severity:** High
Summary: VE port "aptpolicy port_based" did not change internal policy	
Symptom: When an FX8-24 and a FS8-18 are installed in the same chassis and the user attempts to set the routing policy to port-based, it may not take effect and the internal policy could remain as exchanged based routing.	
Feature: 8G Platform Services	**Function:** Routing
Probability: High	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000302706	**Technical Severity:** High
Summary: Tape job over FCIP on FID 128 stopped after sometime in port based route policy environment.	
Symptom: In VF-disable mode, observed aborts and timeout on traffic over FCIP on FID 128 with port based route policy (aptpolicy of 1) in effect.	
Feature: Field Escalation	**Function:** RAS Logging / Tracing
Probability: Medium	
Found in Release: FOS6.3.1	**Service Request ID:** 436473

Defect ID: DEFECT000303951	**Technical Severity:** High
Summary: Ports changed status to mod_val causing ISL downtime after overnight EEdisable/enable test - after reboots	
Symptom: Port status changed to mod_val and ISL fails to form. It's possible that host may not be able to access LUNs and I/O can be interrupted.	
Feature: System Controls/EM	**Function:** Mace/Lance
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000269189	**Technical Severity:** Medium
Summary: SERDES tuning values to support BR–804 HBA. In addition for v6.4.0b, regardless what the fill word mode setting is on the port, it will operate at mode 1 internally with embedded switch Brocade 5480	
Symptom: Fine tune SERDES value for BR–804 HBA support. This change only applies to Brocade 5480 platform.	
Feature: Embedded Platform Services	**Function:** Bulova
Probability: Medium	
Found in Release: FOS6.3.0	
Where Else Fixed: FOS6.4.0, FOS6.3.1 a, FOS6.3.1 b	

Close with Code Change in Fabric OS v6.4.0b

Defect ID: DEFECT000270825	**Technical Severity:** Medium
Summary: Expose all 64 bit port stats counter through SNMP	
Symptom: 64 bit port stats is only available in CLI via portStats64Show, it's not exposed through SNMP.	
Feature: Mgmt Embedded - SNMP	**Function:** Other
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000273725	**Technical Severity:** Medium
Summary: Detected termination of webd and triggered call home event.	
Symptom: At a customer site, webd terminated and restarted from time to time. At the same time as the webd crash, HA status temporarily went to non-redundant, which triggered a Call Home event. webd was killed by watchdog as webd was waiting for a reply from a busy httpd and webd did not have a timeout mechanism. No other functional impact observed besides call home event.	
Feature: Field Escalation	**Function:** Management Services
Probability: Low	
Found in Release: FOS6.2.0	**Service Request ID:** 412187

Defect ID: DEFECT000286033	**Technical Severity:** Medium
Summary: Bottleneckmon cannot be enabled on F-ports with "Locked G_Port" AND "Disabled E_Port" enabled in portcfg.	
Symptom: Customer is not able to enable bottleneckmon --enable <port> on switches with message "Error: port is not an F_Port". The command works as expected after disable Locked G_Port option. This error happens only when both "Locked G_Port " AND "Disabled E_Port" parameters are "on" in portcfgshow.	
Workaround: Disable either or both "Locked G_Port " AND "Disabled E_Port" features; However, changing these features is disruptive.	
Feature: Field Escalation	**Function:** OS: Configuration
Probability: High	
Found in Release: FOS6.3.1	**Service Request ID:** 423357

Defect ID: DEFECT000298078	**Technical Severity:** Medium
Summary: Backup to all cleartext containers using tape application (Netbackup) in a multiplex/stream environment results in a Brocade Encryption Switch fault	
Symptom: The system will fault and result in tape flows halting.	
Feature: Data Security	**Function:** Tape Encryption
Probability: Medium	
Found in Release: FOS6.3.0	**Service Request ID:** 429393

Close with Code Change in Fabric OS v6.4.0b

Defect ID: DEFECT000298268	**Technical Severity:** Medium
Summary: I Series tape I/O stops with tape pipelining enabled	
Symptom: Tape I/O with I Series server is not possible with tape pipelining enabled.	
Workaround: Disable / do not enable tape pipelining.	
Feature: FCIP	**Function:** FCIP I/O
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000298400	**Technical Severity:** Medium
Summary: DCFM encryption support is unable to import large-sized encryption certificates	
Symptom: When importing certificates that contain both the text and Base64 encoded portion of a cert, the import will fail although DCFM encryption support does not report that it fails and reports a success.	
Feature: Data Security	**Function:** Infrastructure
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000300066	**Technical Severity:** Medium
Summary: Data Security, EE in a DCX type chassis can fail to properly accomodate CTC upon EG re-creation	
Symptom: Containers created before EG is deleted do not show up in the fabric post EG re-creation with chassis hosting FS8-18 blades.	
Workaround: slotpoweroff/slotpower on of FS8-18 blade for CTCs to be hosted after EG re-creation.	
Feature: Data Security	**Function:** Infrastructure
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000300754	**Technical Severity:** Medium
Summary: In large configurations, applying TI Zone failover disabled is causing FCP traffic over VEX to throttle back	
Symptom: Applying new TI Zone with failover disabled, FCIP performance (throughput) gets impacted.	
Feature: FCIP	**Function:** FCIP I/O
Probability: Medium	
Found in Release: FOS6.4.0	

Close with Code Change in Fabric OS v6.4.0b

Defect ID: DEFECT000300759	**Technical Severity:** Medium
Summary: Addition of End-to-End Monitors through DCFM or CLI will fail after an HA Failover if Monitors were installed on the switch before the failover.	
Symptom: On a Condor 2 Platform, if the user has End-to-End Monitors installed and then performs an HA Failover, he cannot further install any new Monitors on chips(s) other than on which End-to-End Monitors were already configured prior to the Failover.	
Workaround: Clear all existing End-to-End Monitors on the switch and try to re-install the required monitors.	
Feature: Performance Monitor	**Function:** EE monitor
Probability: High	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301457	**Technical Severity:** Medium
Summary: With tape pipelining enabled, AIX host receiving connection timeout error	
Symptom: AIX host gets a connection timeout error after the first write with tape pipelining enabled.	
Workaround: Disable tape pipelining.	
Feature: FCIP	**Function:** Emulation
Probability: High	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301609	**Technical Severity:** Medium
Summary: FICON FCIP: CHPID cable pull results in invalid FDPB and no way to recover device paths	
Symptom: After cable pull of CHPID port, the FICON path block becomes invalid and the device paths can no longer be recovered without a slotpoweroff/on of the FX8-24 or reboot of the switch.	
Workaround: Reboot 7800 or FX8-24 slot to recover the FICON device connectivity.	
Feature: FCIP	**Function:** FCIP I/O
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301766	**Technical Severity:** Medium
Summary: Host detects tape drive offline intermittently during backup	
Symptom: The tape devices intermittently show "offline" condition to host. This is observed in setup where some Physical Initiators do not register as FC4 type device and some do.	
Feature: Data Security	**Function:** Disk Encryption
Probability: Low	
Found in Release: FOS6.3.0	**Service Request ID:** 433655

Close with Code Change in Fabric OS v6.4.0b

Defect ID: DEFECT000302002	**Technical Severity:** Medium
Summary: Unable to disable default zone from Mi10k in interop fabric(FOS and Mi10k) in IM2 mode	
Symptom: After a zone merge failure between Mi10k and FOS switches, disable Default zone from Mi10k, throws error as "Error: Zone Activation failed due to error in pushing the data to the rest of the fabric", need a switch reboot to recover.	
Feature: FC Services	**Function:** Zoning
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000302325	**Technical Severity:** Medium
Summary: The Brocade 7800 does not support the Path Down function in IM2 mode.	
Symptom: Fabric becomes unstable and segments when one leg of a TI Zone with Failover Disabled is disrupted.	
Feature: FC Services	**Function:** FSPF
Probability: High	
Found in Release: FOS6.3.0	

Defect ID: DEFECT000303264	**Technical Severity:** Medium
Summary: Tape pipelining I/O errors observed when forcing a drop of last data frame	
Symptom: IO errors when forcing drop of last data frame with tape pipelining enabled.	
Feature: FCIP	**Function:** Emulation
Probability: Low	
Found in Release: FOS6.4.0	

Closed with Code Change in Fabric OS v6.4.0a - GA June 4, 2010

This section lists the defects with Critical, High and Medium Technical Severity closed with a code change as of June 4, 2010 in Fabric OS v6.4.0a.

Defect ID: DEFECT000271043	**Technical Severity:** High
Summary: As a result of firmwaredownload, systemverifcation test, or blade insertion, occasionally blade FCoE10-24 may turn faulty 21	
Symptom: Slotshow indicates that FCoE10-24 is found to be in a faulty state	
Workaround: slotpoweroff/on the FCoE10-24 to clear the faulty state	
Feature: CEE-Infrastructure	**Function:** ANVIL DRIVER
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000290749	**Technical Severity:** High
Summary: FICON: FRU events are not generated on the operator's console for removal or insertion	
Symptom: No FRU event notification at the operator's console	
Feature: FICON	**Function:** Ficud
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000296886	**Technical Severity:** High
Summary: Rare corner case of Lossless being disabled after several downgrade and upgrade scenarios.	
Symptom: A DCX logical switch with port based routing, IOD (In-Order Delivery), DLS, and LosslessDLS enabled running Fabric OS v6.3.0b is updated to v6.4.0, Lossless gets disabled.	
Workaround: Re-enable Lossless / IOD on logical switches that were previously enabled.	
Feature: 8G Platform Services	**Function:** Routing
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000297733	**Technical Severity:** High
Summary: With FMS enabled, after moving all ICL and 254 FC ports into a logical switch with zero based addressing, port 1/0 (area 00) is incorrectly disabled	
Symptom: Port 0 with area 0x00 is disabled	
Workaround:	
Feature: 8G Platform Services	**Function:** FOS Kernel Drivers
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000297793	**Technical Severity:** High
Summary: Data encryption, name server fails to show the existence of a specific virtual initiator	
Symptom: As a result of an external FC port experiencing an excessive number of encoding CRC errors the internal ports are faulted incorrectly by switch firmware, hence a data encryption virtual initiator associated with the internal port fails to appear in name server.	
Workaround: Remove the condition / cause of the excessive CRC errors (ie replace cable or SFP).	
Feature: Data Security	**Function:** Platform
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000297978	**Technical Severity:** High
Summary: Zoned terminated while activating zoning from DCFM	
Symptom: Unexpected reboot and failover if attempt to push zone DB from DCFM in IM2/IM3 fabrics only.	
Workaround: Use CLI (or ECFM for non-TI/Redirect zones) in IM2/IM3	
Feature: FC Services	**Function:** Zoning
Probability: Medium	
Found in Release: FOS6.4.0	
Where Else Fixed: FOS6.3.1 b	

Defect ID: DEFECT000298015	**Technical Severity:** High
Summary: After code upgrade, non Brocade branded SFPs got Mod_Val.	
Symptom: non-Brocade branded SFPs are in Mod_Val state after firmware upgrade. This impacts FOS v6.2.2x and FOS v6.3.1x only with 1 specific non-Brocade branded SFPs.	
Workaround: Use Brocade branded SFPs	
Feature: 4G Platform Services	**Function:** FOS Kernel Drivers
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000298098	**Technical Severity:** High
Summary: FICON: NSD panic while running IRNDUP to SW48K	
Symptom: Missing interrupt (IFCC) while running IRNDUP	
Feature: FC Services	**Function:** Name Server
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000298730	**Technical Severity:** High
Summary: A LUN sized > 2TB cannot be configured for encryption with the -newLUN option	
Symptom: There is a potential for hosts to overwrite encryption metadata for encrypted LUNs where Read Capacity (16) is used to determine max LUN LBA (LUNs greater than 2TB in size).	
Workaround: Do not configure LUNs for encryption, using the -newLUN option if the LUN size is greater than 2TB.	
Feature: Data Security	**Function:** Disk Encryption
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000299991	**Technical Severity:** High
Summary: FICON: Webtools out of sync with CLI in not showing correct port status when FMS mode is enabled and port is moved between different logical switches from the DCFM	
Symptom: Webtools port status from Port Admin is not displaying correct port status where CLI does.	
Feature: WebMgmt	**Function:** WT Platform Support
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000300388	**Technical Severity:** High
Summary: WebTools: Name server tab unable to export name server data base from FCR configured switch.	
Symptom: After opening the name server tab and performing export the tables, export fails with an error message “For Input String N/A”.	
Feature: WebMgmt	**Function:** Name Server
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000301006	**Technical Severity:** High
Summary: Data Encryption, tape containers get stuck in login busy state after performing ISL disruption tests	
Symptom: Performing HA failover by toggling ISL between HA cluster members can cause containers to be not hosted with reason "login busy".	
Workaround: Do not connect target devices to BES directly, but connect them to an L2 switch.	
Feature: Data Security	**Function:** Tape Encryption
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000281212	**Technical Severity:** Medium
Summary: In AG mode, N-Port failover results in F-Ports with attached hosts getting stuck as G_Port	
Symptom: F-Ports get stuck as G-Ports after AG N-Port failover.This happens when there is a change in the base address for the N-Port due to failover, or when there is no wwn-area mapping for few devices and due to the login sequence of these devices, the PIDS assigned conflicted with the already allocated PID to another device, resulting in the F-Ports getting stuck as G-Port.	
Workaround: portdisable/enable	
Feature: Embedded Platform Services	**Function:** Other
Probability: Medium	
Found in Release: FOS6.2.0_bc	

Defect ID: DEFECT000286529	**Technical Severity:** Medium
Summary: FICON: when CHPs are very busy, CUP may report many IFCCs	
Symptom: IFCCs on CUP exchange	
Feature: Field Escalation	**Function:** FICON
Probability: Low	
Found in Release: FOS6.3.0	

Defect ID: DEFECT000288968	**Technical Severity:** Medium
Summary: When running 200 ms delay and 1% packet loss, after 4 days of run time, an IPSec enabled FCIP circuit bounced.	
Symptom: Tunnel bounce can occur.	
Feature: FCIP	**Function:** FCIP Port
Probability: Low	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000289418	**Technical Severity:** Medium
Summary: Tape drives fail when running over FCR with EX ports in Open mode. The REC accept payload is incorrect.	
Symptom: If host to tape I/O traverses FCR and includes an edge fabric, the tape drives would run for a bit and then fail due to REC ACC is not processed correctly if EX port is operating in IM3/Open mode.	
Feature: Legacy FCR - 7500/FR4-18i	**Function:** FCR Daemon
Probability: High	
Found in Release: FOS6.3.0	**Service Request ID:** 419137

Defect ID: DEFECT000290784	**Technical Severity:** Medium
Summary: Abort in Read emulation if Attention status received between status and status accept	
Symptom: IFCCs during Tape Read processing.	
Workaround: Disable FICON Emulation	
Feature: FCIP	**Function:** FCIP I/O
Probability: Medium	
Found in Release: FOS6.3.1	

Defect ID: DEFECT000298077	**Technical Severity:** Medium
Summary: FICON: IFCCs seen when enabling ICL ports wiht Lossless DLS enabled	
Symptom: IFCCs observed and traffic can be adversely affected.	
Feature: 8G Platform Services	**Function:** Routing
Probability: Medium	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000298120	**Technical Severity:** Medium
Summary: Port based routing frame were out of order when FCP image pairs concurrently initiate exchanges as originators over GE ports	
Symptom: 3rd party device has very poor performance over FCIP link between two Brocade 7800 over 1G GE port. Same issue applies to FX8-24 blades.	
Feature: FCIP	**Function:** FCIP Performance
Probability: Medium	
Found in Release: FOS6.3.1	**Service Request ID:** 429767
Where Else Fixed: FOS6.3.1 b	

Defect ID: DEFECT000298774	**Technical Severity:** Medium
Summary: Multiple critical CDR-1003 raslog during supportsave	
Symptom: After a non-disruptive upgrade from Fabric OS version v6.1.x to Fabric OS version 6.2.x, CDR-1003 CRITICAL messages may be posted during a supportSave operation on Brocade 4G platforms. With the fix in this release, the critical message is update to Warning and it can be ignored unless it's persistent and not happening during supportsave.	
Workaround: Ignore if CDR-1003 happens during supportsave and not persistent.	
Feature: 4G ASIC Driver	**Function:** ASIC Driver
Probability: High	
Found in Release: FOS6.3.1	

Defect ID: DEFECT000299335	**Technical Severity:** Medium
Summary: FICON emulation, core hangs during error recovery	
Symptom: After an FCIP link failure, an FFDC will occur and some traffic across remaining FCIP links will continue to be disrupted.	
Feature: FCIP	**Function:** Emulation
Probability: High	
Found in Release: FOS6.4.0	

Defect ID: DEFECT000300065	**Technical Severity:** Medium
Summary: Data Encryption, Manual HA failback command on FOS v6.4.0 fails	
Symptom: Manual failback command (cryptocfg –-failback -EE) issued from node other than failed over node fails with an error.	
Workaround: Issue the manual failback command from the node hosting the failed over containers.	
Feature: Data Security	**Function:** HA Cluster
Probability: Medium	
Found in Release: FOS6.4.0	